C 108 - Textile industries. 4
1607
26. 40

AMERICA'S LARGEST TEXTILE MONTHLY

COTTON

Entered as second-class matter at the postoffice, Dalton, Ga., under Act of March 3, 1879.

Volume 88
Number 1
$1.00 a Year

NOVEMBER, 1923

Published monthly by
W. R. C. Smith Publishing Co.
Dalton, and Atlanta, Ga.

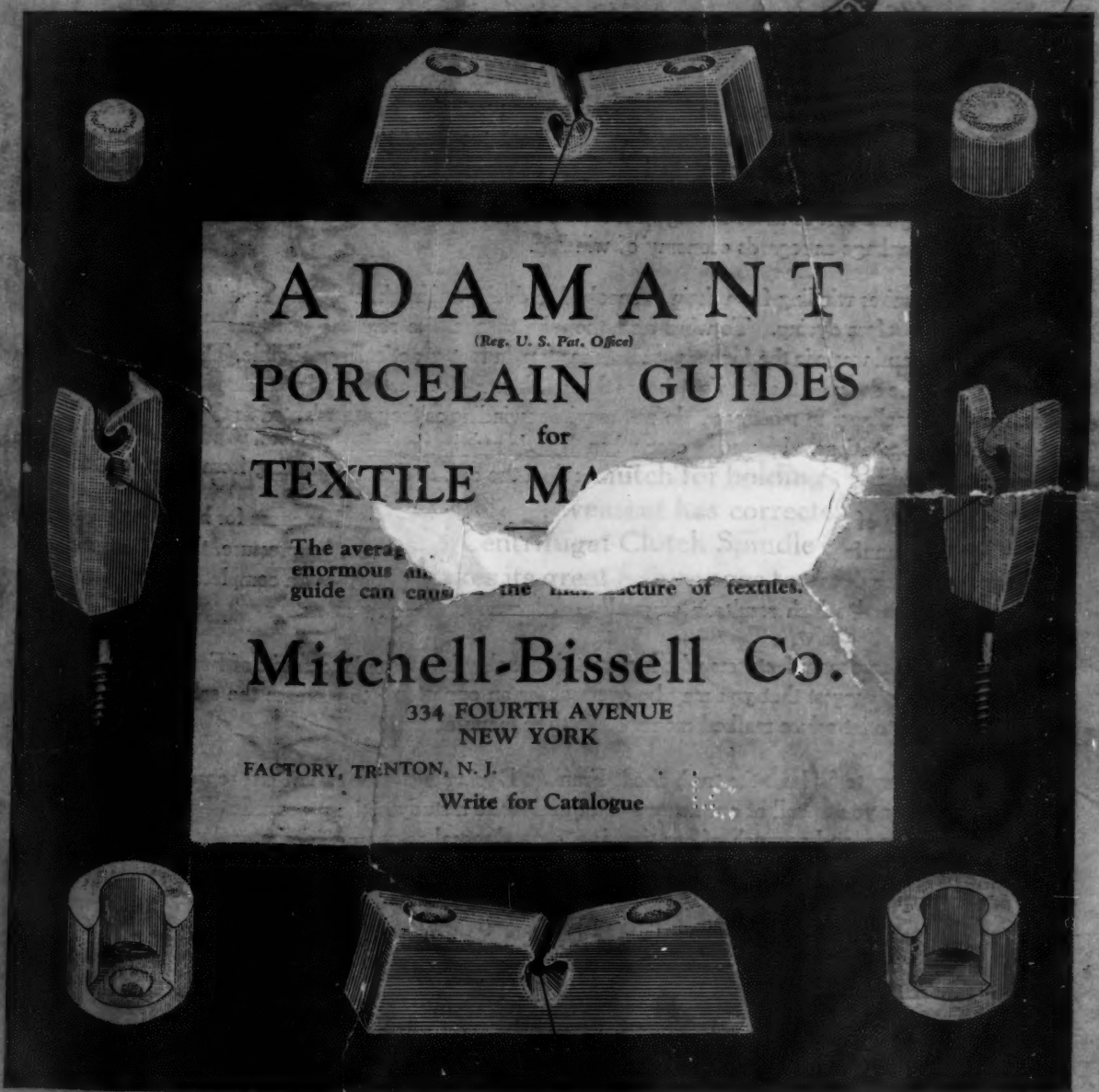


Table of Contents, Page 45. Buyers' Guide, Page 284. Advertisers' Index, Page 296

Which Is the Most Economical to Wind—
A Skein or a Package?

TS1550
.C8

ABSURD as this question may seem to you, we are nevertheless frequently obliged to put it to experienced textile men, simply because they have been too busy to take even the small amount of time required to discover the fundamental advantages of Franklin Process dyeing over other methods.

When comparing the cost of skein dyeing with the cost of Franklin dyeing, it resolves itself into a matter of skein versus package as regards economy of winding.

Skein dyeing requires winding from skein to spool after dyeing. Franklin dyeing requires winding from tube to package before dyeing. To wind from the tube to package requires less time than from dyed skeins to spools, and waste in the former process is far less, in fact, practically negligible. This saving alone whether you or the dyers do the winding, makes the Franklin Process worthy of your careful investigation. Franklin dyed packages in most cases do not require rewinding as they are adapted as they stand to most subsequent [illegible]. However, even when they do require rewinding the total winding cost including the extra [illegible] than the winding from skein to spool.

When th[illegible] less cause for hesitation on the part of textile manufa[illegible]der pressure, the liquor being forced from the inside to the [illegible] way a complete penetration of the yarn is obtained, which results in unusually soun[illegible]olors.

Are you one of those manufacturers who have not thoroughly investigated the merits of Franklin Dyeing? If so permit us to suggest that you may be overlooking an opportunity to increase the salability of your goods as well as to introduce marked economies in their manufacture.

The only sure way to find out the truth about Franklin Dyeing is to have one of our representatives call, or, better still, for you to call at our nearest plant and make a study of the process first hand. You will always be welcome, and as much of our time is at your disposal as you may desire.

FRANKLIN PROCESS CO.
Philadelphia PROVIDENCE Manchester, Eng.
New York Office, 72 Leonard Street
SOUTHERN FRANKLIN PROCESS CO
Greenville, S. C.

Any Disposition To Let Well Enough Alone Is a Dangerous Policy

Are you, Mr. Textile Manufacturer, getting Maximum Production from your Ring Spinning? If not, is it because you have been content to get along with the spindles and rings you have with a limited amount of annual replacement and periodical repairs?

Do You Know

That Our Wire-Packed Bolster has prolonged the life-effectiveness of the Spindle by postponing the day of vibration? That it has reduced the cost of Spindle maintenance?

That the Centrifugal Clutch Spindle has been radically and most effectively improved by the invention of the Nutting clutch for holding the leaves in place? This improvement has corrected the one weakness the Centrifugal Clutch Spindle developed in use and makes its great advantages to the Spinner more apparent than ever.

The Story of These Improvements

And what they mean to you in your busines is worth investigation. We have the men who can give you the facts. How you use the information is up to you.

Let's Talk It Over.

DRAPER CORPORATION

HOPEDALE MASSACHUSETTS

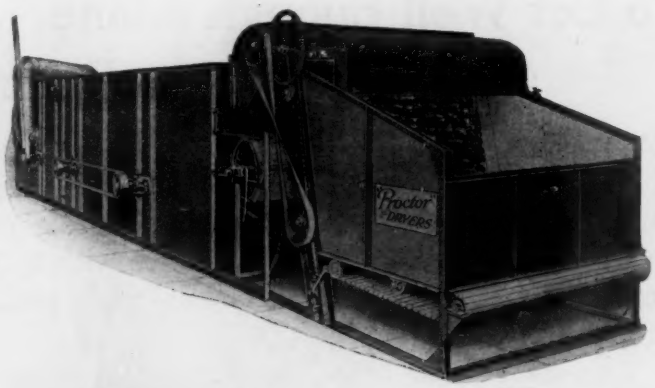
SOUTHERN OFFICE ATLANTA GEORGIA

Copyright 1917 by Draper Corporation

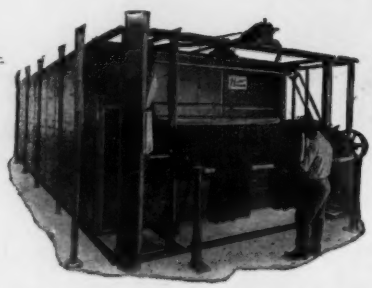
Nov 30 1923

DRYING MACHINERY

TYPES FOR ALL TEXTILE RAW MATERIALS AND PRODUCTS



"Proctor" Automatic Dryer for Bleached and Dyed Cotton, Linters and other Raw Stock.



"Proctor" Automatic Skein Yarn Dryer

IN the many different types and applications of "Proctor" Dryers, you are sure to find the most satisfactory means of drying any textile raw stock, yarn or fabric—at new low limits of cost.

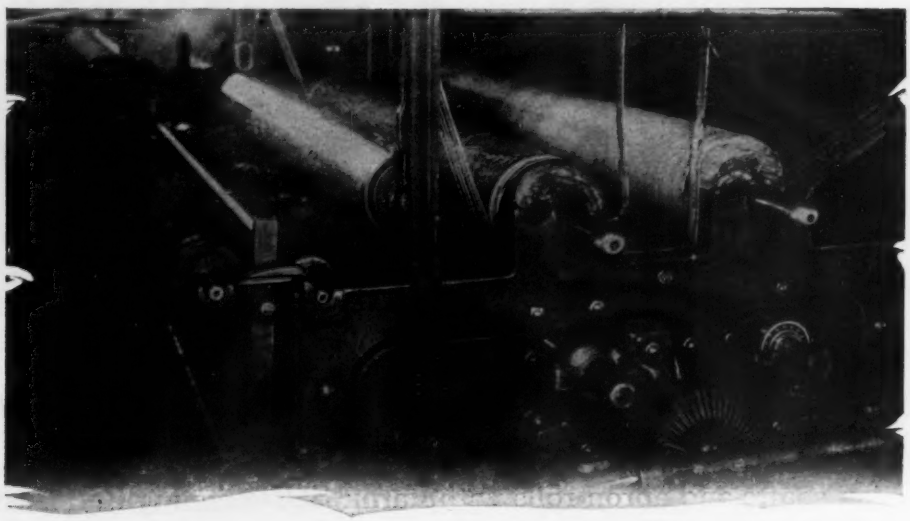
There are Single Conveyor and Three Conveyor types of "Proctor" Dryers for raw stock; Truck and Automatic Dryers for skein yarns; Tray Dryers for package yarns; Automatic Loop Dryers for piece goods; Housing and Air Circulation Systems for cotton and woolen goods tenters; Automatic Boarding Machines for hosiery; Carbonizing Dryers for wool stock, rags and cloth.

Often, very unusual drying requirements are mastered in modification of standard types of "Proctor" Dryers, or in new designs. In any problem of drying, you can make good use of our unequalled experience—an experience of 40 years, specializing in drying machinery.

PROCTOR & SCHWARTZ, INC.

Formerly
THE PHILADELPHIA TEXTILE MACHINERY CO.
SMITH & FURBUSH MACHINE COMPANY
PHILADELPHIA, PA.

SKF



Ball Bearings on Size Rolls

Being Non-Wearing Prevent Sizing Leakage

THE heat of the sizing makes it extremely difficult to keep sleeve types of bearings on the size rolls properly lubricated. As a result they wear rapidly, placing the weight of the size rolls upon stuffing boxes which in turn wear rapidly and permit the sizing to leak out.

On the other hand Skayef self-aligning ball bearings on size rolls are easily lubricated and being non-wearing keep the roll in the center of the stuffing box, relieving it of any load so that there is no wear and consequently no leakage of the sizing.

As a result bearing adjustments and renewals and stuffing box repairs are unnecessary, the only attention required being an occasional lubrication.

Because of their cleanliness, freedom from constant attention and their power-saving and non-wearing features, ball bearings are invariably preferred by experienced users on textile machinery of all kinds. May our engineers submit recommendations?

THE SKAYEF BALL BEARING COMPANY

Supervised by SKF INDUSTRIES, INC., 165 Broadway, New York City

1027

Normal View *Deflected View*

BALL BEARINGS

The Highest Expression of the Bearing Principle

FAFNIR

An Ounce of Preventive Is Worth a Pound of Cure

Isn't it better business to take steps to prevent your goods from becoming soiled than it is to try to clean the cotton after it has been smeared with oil?

Isn't it cheaper to save power and prevent wear by cutting out friction than it is to pay for power waste and repairs?

Isn't it safer to prevent fires than it is to try to extinguish them?

When it comes to picker bearings, isn't an ounce of preventive worth a pound of cure?

Picker bearing troubles can be prevented by equipping your beater shafts, fan shafts and apron rolls with **Fafnir Self-Aligning Ball Bearing Applications.**

THE FAFNIR BEARING COMPANY

New Britain, Conn.

Southern Representatives:

O. R. S. POOL,
Box 1375
Greenville, S. C.

W. SHAW,
358 S. Converse St.
Spartanburg, S. C.

The cost of labor in wages WITHOUT Group Insurance

The cost of labor in wages WITH Group Insurance

Can you see any difference in size?

(THE RIGHT SQUARE IS $\frac{1}{16}$ OF AN INCH LARGER ON EACH SIDE)

YOU know that the cost of Group Life Insurance per employee is surprisingly low when figured on either a weekly, monthly, or annual basis, but you wonder probably if the total of these small sums will be a large amount annually. An approximate figure can be given you with a brief calculation.

But without making a calculation on a particular group you can get a perspective on the cost by examining the two squares. They form a chart of the cost of Group Insurance.

In some groups it is possible to install Group Insurance for an annual cost of $1,000 on an annual payroll of $150,000. In other groups the figure may amount to $1,500. Even on a group with a payroll of this size the cost is not greater than that of an additional employee. Who, as an employer, would hesitate about adding one name to a payroll of $150,000 a year if the bearer of that name would materially increase the loyalty and production of the entire group? Who will hesitate at employing Group Insurance to perform a similar service at a similar or even smaller cost?

Group Insurance may be paid for monthly, quarterly, semi-annually, or annually—in the same way that an additional employee is paid for—and the cost is lost in the benefits that accrue.

The low cost of Travelers Group Insurance is GUARANTEED

This portfolio, giving a comprehensive, yet brief exposition of Group Insurance, has been prepared for executives

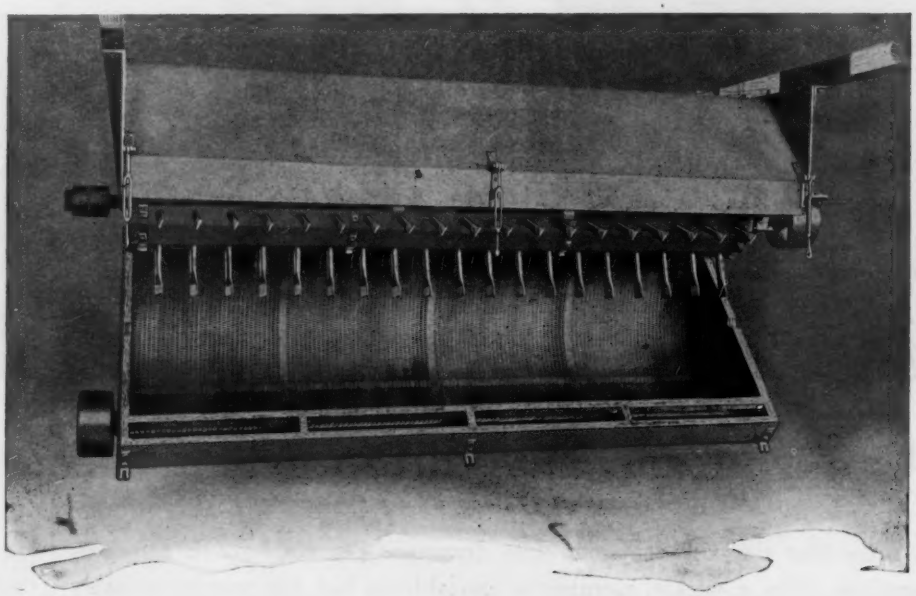
THE TRAVELERS INSURANCE COMPANY
Hartford

Send for your copy today. Have your stenographer write on your business letter-head. Your request will not obligate you in any way.

THE TRAVELERS INDEMNITY COMPANY
Connecticut

THE TRAVELERS

ACCIDENT, LIFE, LIABILITY, HEALTH, AUTOMOBILE, STEAM BOILER, COMPENSATION, GROUP, BURGLARY PLATE GLASS, AIRCRAFT, MACHINERY



Put Your Conveyor Pipe to Work

You can give your cotton a thorough cleaning, opening and aerating, while it's being conveyed from the bale breakers to the picker room. The Murray Cotton Cleaning and Aerating Machine forms a part of the conveyor pipe, and vastly improves the stock before it is fed to the pickers.

The "Murray" takes up very little extra space, since it can be hung from the ceiling. Its supply of cotton is drawn through it by the suction of the conveyor pipe fan, no additional fan or increased draft being necessary. A further economical feature is the fact that the "Murray" requires practically no attention since the dirt is automatically disposed of through a chute at one end.

Handles 2,500 Lbs. Hourly.

2,500 pounds of cotton per hour can be cleaned, opened and aerated in the Murray machine at a power expenditure of only 3 to 5 H.P. The stock is given a thorough treatment by 114 revolving arms.

The Bowling Green Spinning Mills write us stating "The Opener we purchased from you is giving entire satisfaction in every way. In fact we think it is a wonderful machine."

THE MURRAY COMPANY, ATLANTA, GA.

Northern and New England Sales Representatives:
Aldrich Machine Works
P. O. Box 132, Providence, R. I

Carolina Sales Representatives:
Carolina Specialty Co.
Brevard Court
Charlotte, N. C.

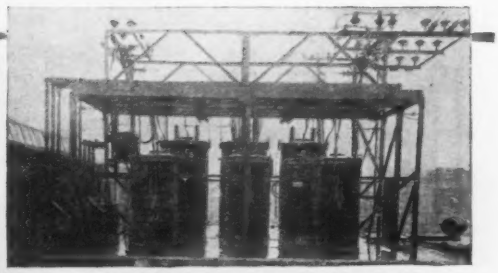
The Murray (PAT. PENDING)
COTTON CLEANING AND AERATING MACHINE

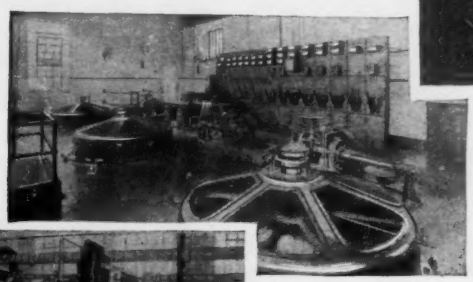
COTTON WELL OPENED IS HALF SPUN

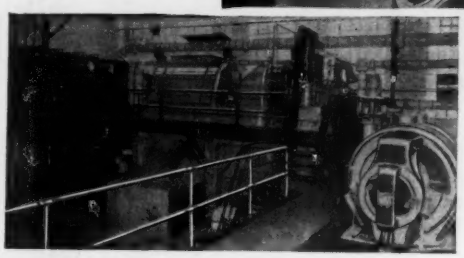
Cotton

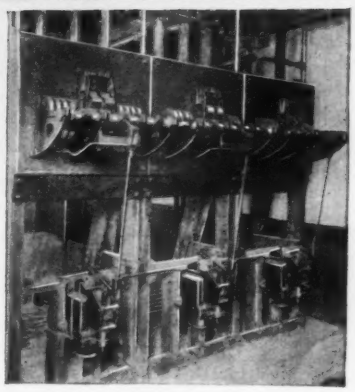
To Best Utilize Electric Power

Power Plant









Generators, Switchboards, Transformers, Circuit Breakers—

There Is G-E Equipment For Every Power Plant Need

Steam Turbines—Curtis Turbines for extraction of low-pressure steam improve operating efficiency. Used in connection with heating buildings, drying processes, etc. A special form of G-E Steam Turbine is well adapted to driving medium- and low-speed centrifugal pumps, fans, blowers and similar apparatus. Furnished direct-connected or geared.

Water Wheel Driven Generators—Complete G-E electrical equipment for hydro-electric stations is available for manual, remote or automatic control.

Automatic Stations—Automatic Control for water power generators, synchronous converters, motor-generator sets and feeder lines, both a-c. and d-c.

Switchboards—G-E Switchboards for all electrical distribution systems. All equipment being made by a single company centralizes responsibility for behavior of the entire board.

Circuit Breakers—G-E Oil Circuit Breakers for current capacities up to 5000 amp. and for the highest commercial voltages. G-E Air Circuit Breakers are available for any service.

Meters and Instruments—With G-E Switchboards can be furnished all of the various devices used in conjunction with them—meters and instruments for any service, instrument transformers, relays, switches and circuit breakers, and other accessories. These devices are also furnished separately.

Flow Meters—G-E Flow Meters for measuring the flow of steam, water, air, gas or oil through pipes.

Wiring Supplies—G-E Insulated Wires and Cables for use under all conditions of distribution of electricity in the textile and power plant. G-E Wiring Devices and fuses for every need.

Transformers—On distribution circuits for light and power, Type H transformers are available in standard sizes from 1½ to 200 kv-a. These can also be furnished for special service.

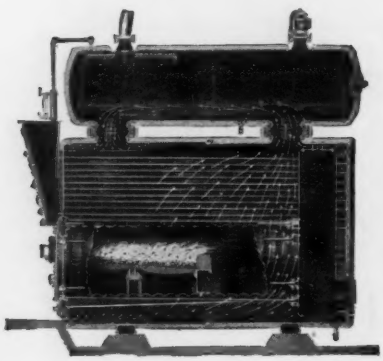
Voltage Regulators—Mills buying electric power from central stations and supplied from unregulated feeders will profit by installing G-E Induction Regulators to hold voltage constant and thereby improve illumination, since a drop of 10% in lamp voltage decreases candle power more than a third. Made in any sizes required and also for outdoor mounting.

General Electric Co. **Schenectady, N. Y.**

GENERAL ELECTRIC

44-R

More Dry Steam With Less Fuel



HERE'S a perfect Scotch Boiler—a boiler that will generate more steam with less fuel.

Rapid, unrestricted circulation is absolutely necessary to the efficiency of any boiler, and while this feature is claimed for by many boiler manufacturers, the design of this boiler is such that it is positive at all times.

Large overload capacity, dry steam generated, and the remarkable flexibility of meeting fluctuating demands particularly adapts this boiler to severe conditions in industrial mills and plants.

Greatest economy is assured because of the circulating passage, which delivers water from the front neck to the bottom of the shell.

A constant temperature is assured because of this circulation which relieves uneven strains and stresses on this type of boilers.

There are no troublesome brick settings, as the boiler is self-contained and is ready for operation upon delivery.

Write today for detail information.

INTERNATIONAL ENGINEERING WORKS, Inc.
FRAMINGHAM, MASS.

Southern Representative, Isaac Hardeman, Charlotte, N. C.

BOSTON
PHILADELPHIA

NEW YORK
SAN FRANCISCO

IN THREE MINUTES one man can install a complete Westinghouse Reflector-Socket Fixture.

This "easy to wire" feature has saved manufacturers many dollars in the installation of their industrial lighting equipment. It is one of the chief reasons for the wide popularity of Westinghouse Reflector-Socket Fixtures.

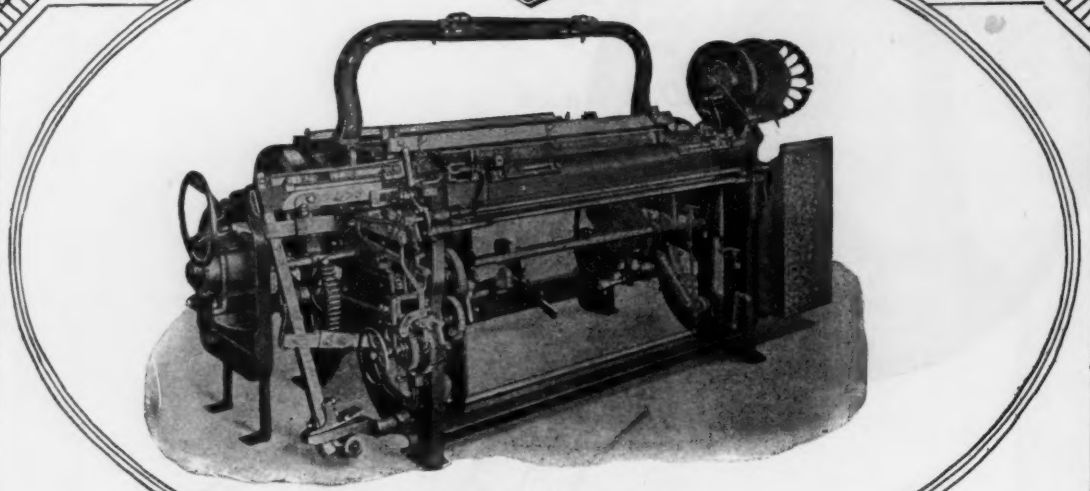
Westinghouse Interior Lighting Engineers will be pleased to show you how installation costs can be kept at a minimum and other benefits obtainable by the use of Westinghouse Reflector-Socket Fixtures.

For complete information, write to—

Westinghouse Electric & Manufacturing Company
George Cutter Works South Bend, Ind.

Westinghouse Reflector-Socket with Standard RLM Dome Reflector

Westinghouse



Stafford bobbin-changing plain goods loom.

Stafford Looms Increase Production

We manufacture a complete line of automatic looms, both shuttle and bobbin-changing for weaving practically every type of fabric that can be made with a single shuttle. ¶ Stafford shuttle-changing looms will handle cop filling just as successfully as bobbin filling. We have a loom for every kind of yarn, coarse or fine, and for practically every variety of fabric, plain or fancy.

THE STAFFORD COMPANY

WEAVING MACHINERY

READVILLE, MASS.

Branch Office
502 Colt Building
Paterson, N. J.

Southern Agent
Fred H. White,
Charlotte, N. C.

Canadian Representative
Whitehead, Emmans, Limited
Montreal

AUTOMATIC STAFFORD LOOMS

AUTOMATIC SPOOLER

"Every Knot a Weaver's Knot"

HIGH SPEED WARPER

THESE machines will save half the employees in your spooling and warping departments.

For example—if you now have 30 people spooling and warping we can probably do the same amount of work with 15. Assuming that your spooling and warping help averages $15.00 per week each, our machinery will save you $11,700.00 per year in labor cost alone.

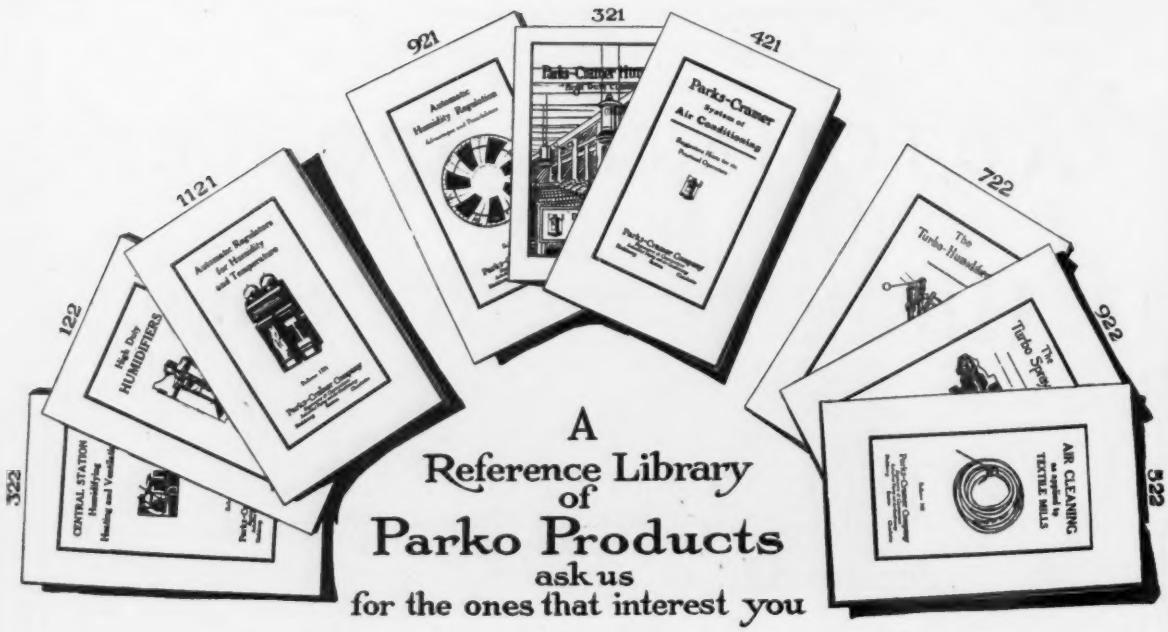
The added advantages of half the floor space saved, weaver's knots, no spooler kinks, better slashing and increased weave room production are worth as much to you as the amount saved by reduced labor cost.

Write for information

BARBER-COLMAN COMPANY

ROCKFORD, ILLINOIS

Boston, Mass. **Greenville, S. C.**



A Reference Library of Parko Products

ask us for the ones that interest you

No. 322—*Air Conditioning by Central Station*—Heating, Ventilating, Cooling and Humidifying from central source. Yarn conditioning apparatus.

No. 122—*The High Duty Humidifier*—The first one, its characteristics and advantages.

No. 1121—*ParkSpray Humidity Regulator*—How it works and what it does.

No. 921—*What Automatic Humidity Regulation* means to the modern textile mill.

No. 321—*The place of Humidity in the Textile Industry* with the factors which govern its use.

No. 421—*Suggestions to the manufacturer* or his operatives, giving helpful hints for the practical operation of humidifiers in each factory operation. A classification of experiences extending over many years.

No. 722—*The Turbo Humidifier*—its particular uses and adaptability to existing conditions.

No. 922—*The Turbo Sprayer* for injecting moisture or oil into fibrous materials.

No. 522—*Air cleaning* as applied to textile mills.

Profit by High Duty Climate

Parks-Cramer Company

Engineers & Contractors

Industrial Piping and Air Conditioning

Fitchburg Boston Charlotte

The Best Yarn in the World Will Not Satisfy

Unless It is Wound True

True winding, free from flaws, with even tension in every yard,—Yarn that delivers smoothly—must be wound on True, Accurate, Rigid, Cones and Tubes; for they are the molds and the frame-work of your packages: If you would satisfy, wind

on "SONOCO" Cones and Tubes:

Southern Novelty Co. Mfrs., Hartsville, S. C.
Sonoco Products Co. Successor

WAGES AND RESULTS

The wages paid to labor and the production received from labor are important elements in determining the location of a textile mill.

Consider the following figures from Seaboard territory.

Classes of labor picked at random.

Spooler Tenders—Female

Alabama	11.41
Georgia	11.86
North Carolina	14.76
South Carolina	10.95

Weavers—Male

Alabama	14.23
Georgia	16.01
North Carolina	19.27
South Carolina	15.72

Compare these wages with results:

	Average weekly wages—all hands	Cotton consumed per spindle: pounds
Alabama	$12.41	135.58
Georgia	13.60	138.49
North Carolina	15.23	104.32
South Carolina	13.35	76.70

Southern labor produces practically 100 per cent more per spindle than Northern labor.

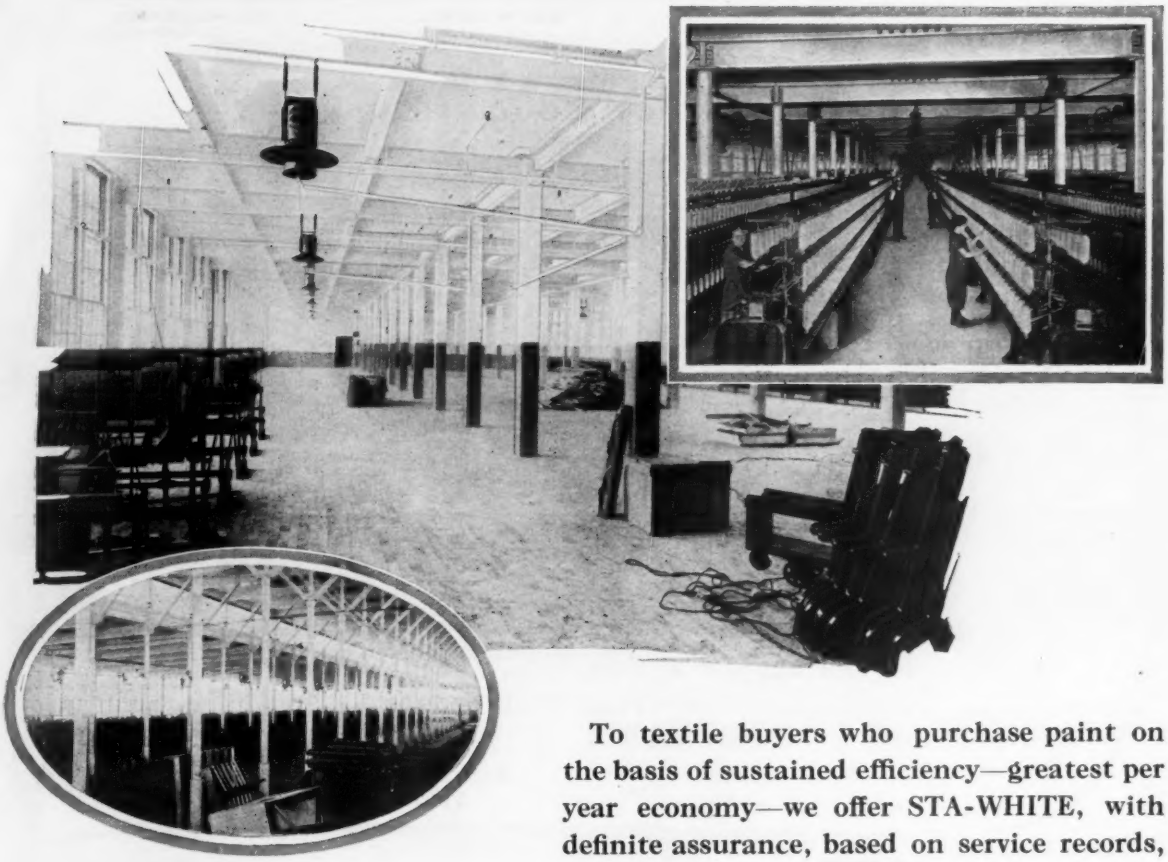
Address

Chas. A. McKeand
General Industrial Agent,

SEABOARD AIR LINE RAILWAY

Oglethorpe Building **Savannah, Georgia**

THE SEABOARD—THROUGH THE HEART OF THE SOUTH



STA-WHITE MAKES THE DIFFERENCE

STA-WHITE is one of the DEGRACO line of dependable paints. Sold through branch offices with warehouse stock in all principal cities.

Manufactured in Canada by Dominion Paint Works, Limited, Walkerville, Canada.

To textile buyers who purchase paint on the basis of sustained efficiency—greatest per year economy—we offer STA-WHITE, with definite assurance, based on service records, that it will prove a highly satisfactory paint investment.

STA-WHITE will meet every requirement that you expect in mill white paint. Its finish is non-porous and washable and reflects maximum amount of light. It will not turn yellow, chip, crack nor peel. Its demonstrated durability assures low per year cost.

If you recognize the value of satisfactory service records you will understand why STA-WHITE is used by the big operators in the textile field as the standard of value in mill white paint.

Write for sample panel and copy of our book, "Lighting Industrial Interiors."

Detroit Graphite Company

555 Twelfth Street, Detroit, U. S. A.

DEGRACO PRODUCTS

- Superior Graphite Paint
- Sta-White
- Degraco House Paint and Varnish
- Degraco-Tone-*Flat wall finish*
- Degraco Brick and Concrete Paint
- Anti-Aqua-*Damp-proof coating*
- Degraco Gas Holder Paint
- Degracolin-*Concrete floor hardener*
- Degraco Enamels
- Industrial Finishes

DEGRACO PAINTS VARNISHES ENAMELS

All Colors for All Purposes

WILLIS A. SUTTON, SUPERINTENDENT
H. REID HUNTER, ASSISTANT SUPERINTENDENT
MARY W. POSTELL, ASSISTANT SUPERINTENDENT
R. L. McCULLOUGH, BUSINESS MANAGER

OFFICE OF
BOARD OF EDUCATION
AND
SUPERINTENDENT ATLANTA PUBLIC SCHOOLS
ATLANTA, GA.

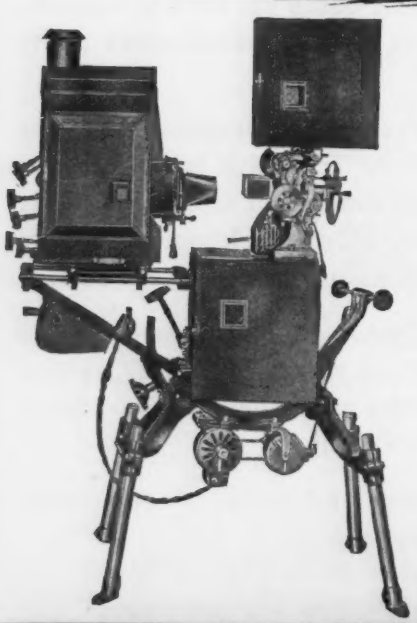
Southern Theatre Equipment Co., Atlanta, Ga.
Gentlemen:--Regarding the educational value of the motion picture in public schools, I wish to call your attention to the following points:

1 and 2--(See previous ads.)

3.-INFORMATION CAN BE IMPARTED MORE RAPIDLY THROUGH THE MOVING PICTURE. The eye is capable of receiving simultaneous impressions of a great many phases of a subject. Compare a moving picture presentation of any event with a verbal description. Compare also the accuracy of the impressions given by the two methods.

A letter from a man who knows

You may use any or all of this letter as you desire.
Very truly yours,
Joe W. Coffman
Supervisor, Visual Instruction,
Atlanta Public Schools.



VISUAL EDUCATION with the motion picture has already proven its value in city schools, and it will prove of even greater value in village and community schools because it accomplishes even greater results with less time and less experienced teachers.

Through the courtesy of Mr. Coffman, we are presenting each month in paragraph form, parts of a very enlightening letter which he has written us, and through Mr. Coffman also, we are able to give our textile mill friends valuable help and suggestions regarding the use of this system in community school work, the selection of the proper films, in fact the solution of every problem which may present itself.

Our service to textile mills is the result of years of experience, and we have installed Powers Motion Picture Projectors and theatre auditorium equipment in over 60 Southern mills. Whether it be a visual education system or complete motion picture theatre equipment, including screens, chairs, cooling systems, etc., we are ready to take the problem off your hands and turn the system back to you ready for operation.

May we present our special proposition to you?

Southern Theatre Equipment Company

WILLIAM OLDKNOW, President.

100 WALTON STREET
ATLANTA, GEORGIA

THREE TWENTY-EIGHT CALIFORNIA ST.,
OKLAHOMA CITY, OKLA.

1907 COMMERCE ST.
DALLAS, TEXAS

Weave Room, Monarch Mills, Lockhart, S. C.

There's nothing like Hockaday. It comes in two parts, Body and Reducer.

How Many Square Feet are You Getting?

A New Paint Service

The Monarch Mill was painted by the Southern Textile Service Company, the service department for the Hockaday Company.

To mills in North and South Carolina, we are equipped to give full service. The advantages of knowing your mill is painted by the same folks who make the paint, are many. Buck-passing is eliminated. It's up to us to give you results.

Why not investigate this service?

Recently the Monarch Mills painted the interior of their Lockhart Plant. One section was finished with a well known brand of paint; one section was Hockaday'd.

Here are the figures. "Blank" paint covered 175 square feet, two coats, to the gallon. On the same kind of surface, Hockaday covered, two coats to the gallon, 250 square feet. Every gallon of Hockaday covered 75 square feet *more* than the other paint.

How many square feet are you getting? Why not put on a comparative test and find out? Hockaday will bring-down your up-keep.

Let us send you detailed information. You will find it mighty interesting.

The Hockaday Company, Inc.
1823-1829 Carroll Avenue
Chicago
O. H. Johnson, Manager, Southern Office,
Newberry, S. C.

A Few Hockaday'd Mills

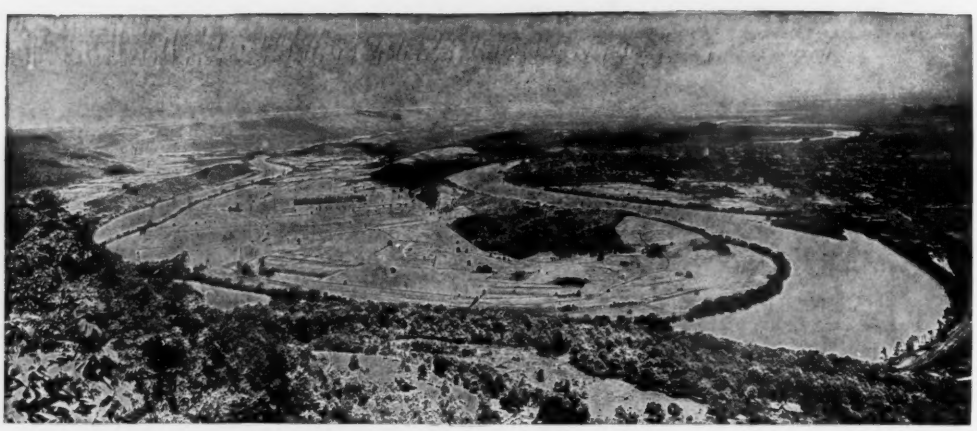
Pacolet Manufacturing Company
Drayton Mills
Tallassee Falls Manufacturing Company
Glenwood Cotton Mills
Easley Cotton Mills
Oakland Cotton Mills
Clinton Cotton Mills
Monarch Mills, Union
Mills Manufacturing Company
Mollohon Manufacturing Company
Salon Mill
Watt's Mills
Orr Cotton Mills

HOCKADAY

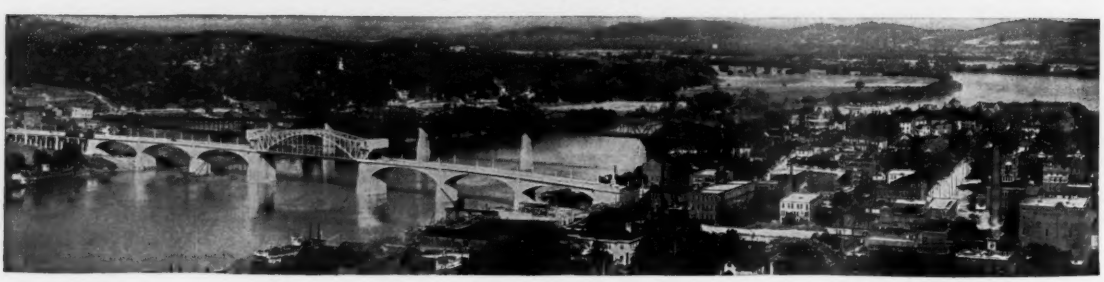
THE WASHABLE PAINT FOR ALL INTERIORS

Tennessee-The Hear

Birds-eye view of Chattanooga.



Moccasin Bend and City from Lookout Mountain



The Tennessee River and $1,000,000 Bridge from Cameron Hill.

The Tennessee El

art of Industrial America

A City Built on Diversity of Products

CHATTANOOGA, with her long and ever growing list of prosperous industrial enterprises, is one of the South's most important manufacturing centers. Approximately 1400 articles of trade are manufactured in nearly 400 different plants—a diversification of industry probably unequalled by any other city in the country. Chattanooga is the leading mercerizing center of the South, produces more hosiery than any other Southern city, and ranks second in this respect for the entire country. Her fifty textile mills with an invested capital of $20,000,000 furnish employment to 12,000 people. "Made in Chattanooga" is seen more often on American goods found in other parts of the world than any other Southern label.

Many reasons have influenced manufacturers in the selection of Chattanooga as a location for new industries. The close proximity of cotton, coal, iron, timber and numerous other raw materials, the marketing facilities afforded by ten railroad lines and the Tennessee River, adequate hydro-electric and steam generated power, and ideal year-round climate have contributed much toward the industrial growth of the community. The unsurpassed scenic beauties of Lookout Mountain, Signal Mountain and surrounding territory make this city an ideal place of residence — where the average worker enjoys happiness, health and comfort.

The peculiar advantages possessed by industries in Chattanooga can also be found in other cities and communities of East Tennessee. We shall be glad to furnish manufacturers interested with any information desired about Tennessee and its opportunities for textile plants.

THE TENNESSEE ELECTRIC POWER CO.
CHATTANOOGA, TENN.

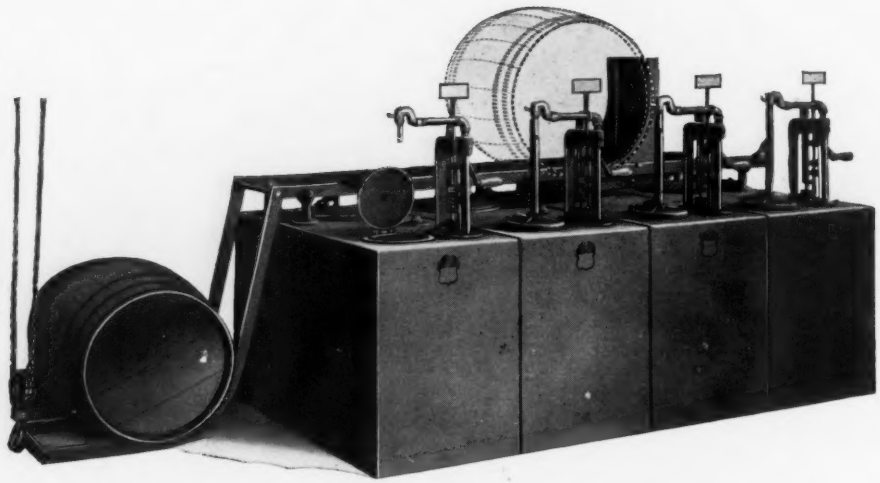
FIVE ADVANTAGES IN TENNESSEE

1. Ideal climate the entire year.
2. Raw materials of all kinds in abundance.
3. Market facilities — unsurpassed rail and water transportation.
4. Ample supply of intelligent and stable labor.
5. Continuous and reliable electric power at low cost.

lectric Power Co~

Why WASTE HALF Your Oil?

through Lack of Efficient Serving and Storage Equipment



Cut 12. First Floor Battery Outfit with Single Acting, Quart Measuring Pumps.

American Oil Storage Systems Eliminate Wastage

If you are using barrels and other obsolete oil storage and serving equipment, your oil bill is at least 50% more than it should be.

With an American Lubricating Oil Storage System this waste can be done away with—you can buy oil in quantity at a lower price—you can get a lower rate of insurance—you can save a large amount of oil now lost through wastage and spillage.

And, most important, an American Oil Storage System will save the valuable time of your men and give you cleaner, better oil.

Cut 36 Outfit Pump with meter attached

A convenient manner for delivering oil into containers in exact quantities.

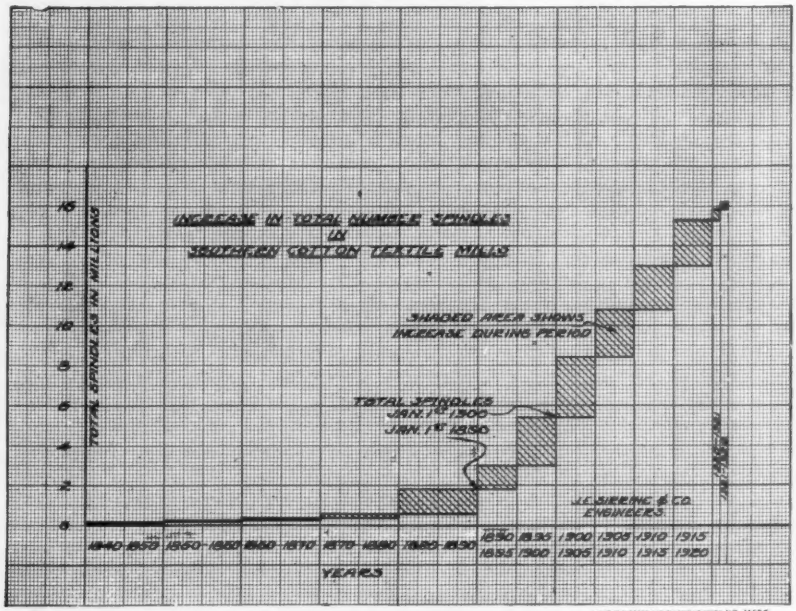
Figure up these items and you will agree that our estimate of wastage is a low one. Then take your year's purchases of oil and let us tell you how long it will take to pay for an American System with the savings you will make.

Write for Bulletin No. 203—find out how you can reduce your lubricating oil bills.

The American Oil Pump & Tank Co.

1179 FINDLAY STREET, CINCINNATI, OHIO

Quotations Furnished on Special Oil Tanks for Holding Any Quantity From 100 Gallons to Car Load



The South's Growth has been Our Growth

WE are proud in looking over our records of past and present achievements to identify our organization with the growth of the industrial South.

The rapid strides made by the South during the last 42 years, in its principal industry, point to it as the future textile center of the World; and in the anticipation, planning and construction of many of these Southern enterprises, it has been our privilege to participate.

In 1880 the South used 12% of cotton consumed by American mills, in 1922 it used 63%.

This amazing change in location of such an enormous activity has demanded great business acumen and constructive genius. That it has not been lacking is evident from this record.

We have been able to assist in securing proper locations for industrial sites; in building small and large factories of all types; in laying out and in constructing industrial towns, with individual homes and apartments, schools, theatres, Y. M. C. A.'s and office buildings; and harnessing rivers to both small and large hydro-electric plants furnishing power to single factories, to groups of factories with their villages of operatives, or to whole districts.

J. E. SIRRINE & COMPANY

Engineers

Greenville South Carolina

THE FUNCTIONS OF THE ENGINEER

SERVICE

Far-sighted paving—

A far-sighted paving policy looks to three other factors just as carefully as to first cost.

The importance of these three questions actually outweighs that of first cost—

I. How many years of service can be expected *without renewal?*

II. After installation what will the cost be per year for *maintenance and repairs?*

III. What will the *salvage* value be after a generation of service?

Stop to think of the older pavements you know and you will realize that you can point to few pavements not of brick or stone which have given thirty or even twenty years of service without re-building.

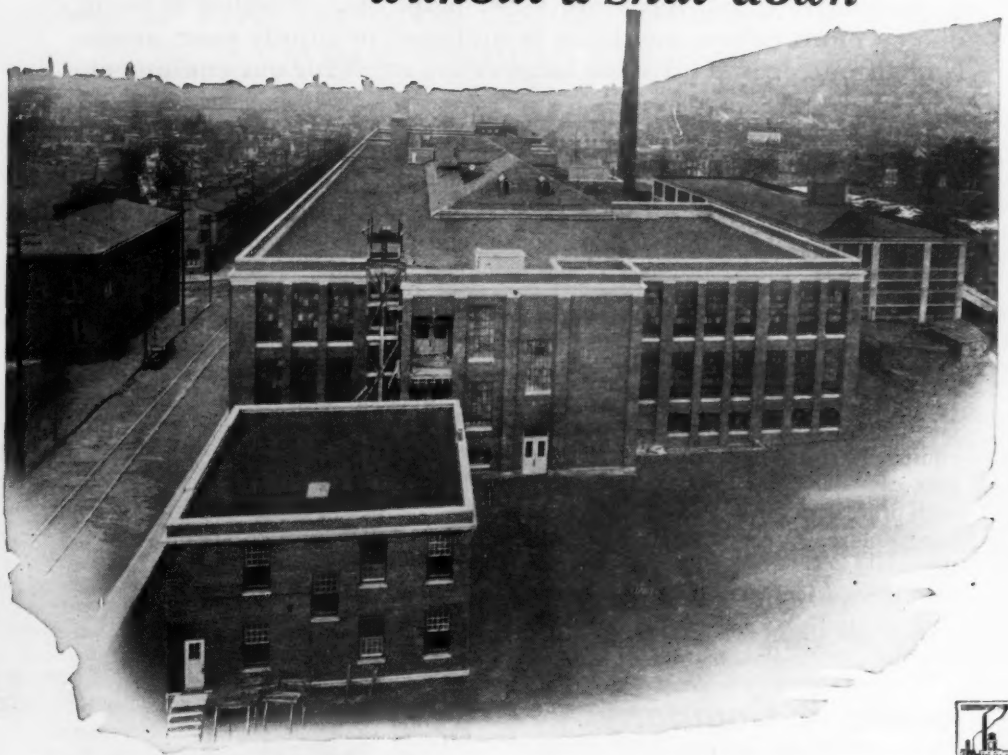
VITRIFIED **Brick** **PAVEMENTS** **OUTLAST THE BONDS**

NATIONAL PAVING BRICK MANUFACTURERS ASSOCIATION
ENGINEERS BUILDING CLEVELAND, OHIO

Albion Shale Brick Company
Albion, Ill.
Alton Brick Company
Alton, Ill.
Barr Clay Company
Streator, Ill.
Binghamton Brick Company
Binghamton, N. Y.
Cleveland Brick & Clay Company
Cleveland, Ohio
Clydesdale Brick & Stone Co.
Pittsburgh, Pa.
Coffeyville Vitrified Brick & Tile Co.
Coffeyville, Kans.
Collinwood Shale Brick Company
Cleveland, Ohio
Corry Brick & Tile Company
Corry, Pa.
Francis Vitric Brick Company
Boynton, Okla.
Georgia Vitrified Brick & Clay Co.
Augusta, Ga.
Globe Brick Company
East Liverpool, Ohio.
Hammond Fire Brick Company
Fairmont W. Va.
Hocking Valley Brick Company
Columbus, Ohio.
Independence Paving Brick Co.
Independence, Kans.
Mack Mfg. Company
Wheeling, W. Va.
C. P. Mayer Brick Company
Bridgeville, Pa.
Medal Paving Brick Company
Cleveland, Ohio.
Metropolis Paving Brick Co.
Pittsburg, Kansas.
Metropolitan Paving Brick Co.
Canton, Ohio.
Mineral Wells Paving Brick Co.
Mineral Wells, Texas.
Moberly Paving Brick Company
Moberly, Mo.
Murphysboro Paving Brick Co.
Murphysboro, Ill.
Patton Clay Mfg. Company
Patton, Pa.
Peebles Paving Brick Company
Portsmouth, Ohio
Pittsburgh Paving Brick Company
Pittsburgh, Kansas.
Purington Paving Brick Company
Galesburg, Ill.
Southern Clay Mfg. Company
Chattanooga, Tenn.
Springfield Paving Brick Company
Springfield, Ill.
Sterling Brick Company
Olean, N. Y.
Streator Clay Mfg. Company
Streator, Ill.
Thornton Fire Brick Company
Clarksburg, W. Va.
Thurber Brick Company
Ft. Worth, Texas.
Toronto Fire Clay Company
Toronto, Ohio
Trinidad Brick & Tile Company
Trinidad, Colo.
Veedersburg Paver Company
Veedersburg, Ind.
Western Shale Products Company
Fort Scott, Kans.
Westport Paving Brick Company
Baltimore, Md.

SOLVED!

-the old plant re-made without a shut-down



HERE was a mill that had completely outgrown itself. With the demand steadily growing, more production capacity was essential. Yet the company, if it was to continue giving service to its customers, could not afford to close down a single day.

Lockwood, Greene & Co. met the problem by entirely rehabilitating and modernizing the mill, installing a new power plant, new machinery and improving the old. The equipment in the picker room was increased and new pickers were equipped with individual motors. The spinning mill was enlarged with additional frames run by individual chain-driven motors. In the weaving mill, 160 Draper looms were added. These improvements were all made without any interruption of production.

In solving such problems, Lockwood, Greene & Co. have the great advantage of long experience as leaders in textile mill engineering. Hardly a situation arises that does not have its precedent in Lockwood-Greene experience.

Lockwood-Greene service includes every phase of engineering and management from the planning of new mills to the operation of existing plants. Write for "Building With Foresight," which describes what Lockwood-Greene service has accomplished for others. Or, better still, let us discuss with you your particular problems.

BUILDING WITH FORESIGHT

LOCKWOOD, GREENE & CO.

ENGINEERS

EXECUTIVE OFFICE, 24 Federal Street, BOSTON 9

BOSTON ATLANTA CHICAGO NEW YORK DETROIT
CLEVELAND CHARLOTTE

Lockwood, Greene & Co. of Canada, *Limited*, Montreal; Compagnie Lockwood Greene, Paris, France

If It's A Broadside—

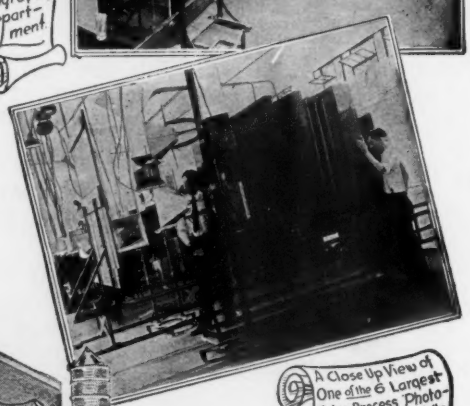
If it is an especially large illustration for an especially large piece of literature, chart, birds eye view, map, etc. Whether it be in one or more colors, our plant is equipped to supply your needs. No halftone or line plate too large or too small for our equipment.

Illustrating Your Literature

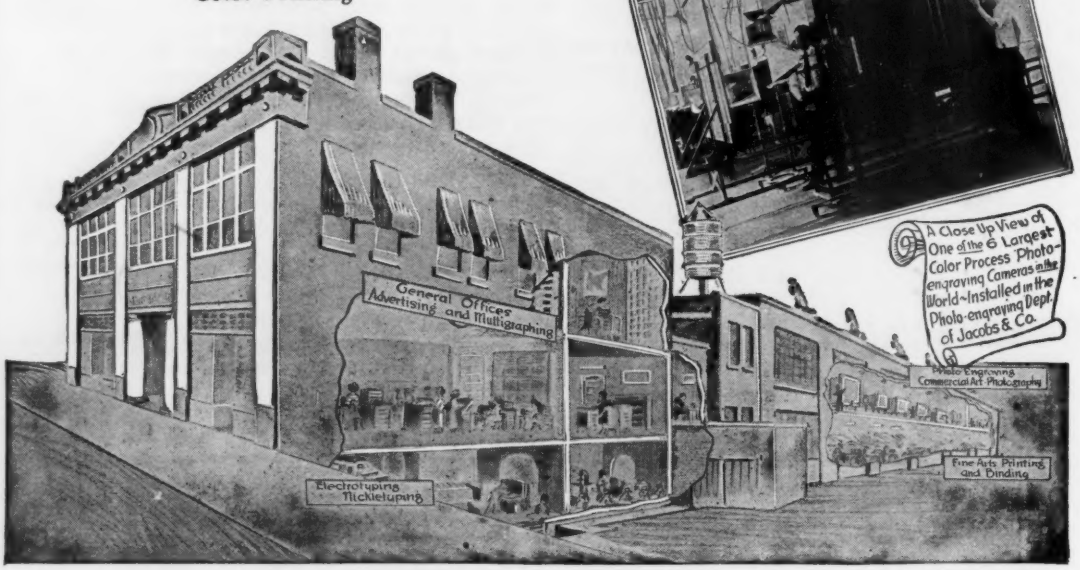
Sometimes in the preparation of your sales and advertising plans you find the need of some especially prepared piece of literature, the execution of which will baffle your photographer, electrotyper and printer. Frequently you may seek a service that the ordinary plant cannot give.

Our plant is designed and equipped for the accomplishment of many difficult products that cannot be secured from most photo-engraving establishments; is equipped to furnish the best of photo-engraving, electrotyping, printing, nickeltyping, commercial art and allied service, whether large or small, whether one or more colors. The extent of our equipment is reflected in the large process camera, which can furnish you with process color plates as large as a yard square. One of the 6 largest in the world. If you have an idea you wish carried into execution, we are at your service. We will gladly perfect it and illustrate it.

Battery of Cameras in the Photo-Engraving Department



A Close Up View of One of the 6 Largest Color Process Photo-engraving Cameras in the World—Installed in the Photo-engraving Dept. of Jacobs & Co.



Jacobs & Company
Clinton, S. C.

Advertising, Commercial Art
Photo-Engraving—Electrotyping
Nickeltyping
Color Printing

PERMANENT ROOF CONSTRUCTION

A series of articles by the Technical Staff of the Richardson Research Laboratories, showing what modern science has done to perfect the materials and methods of roof construction

No. 2. The physical requirements of a perfect waterproofing bitumen

The one quality above all others you demand of roofing or waterproofing is *permanence*. For you don't want an otherwise flawless building damaged because the roof, for example, breaks down under the weather.

Every modern structure, as you know, requires a certain amount of flexibility in each part, so as to care for strains and stresses due to wind pressure, ground movement, unusual loads, seasoning. Especially important is this flexibility in the waterproofing bitumen used.

Up to the present time, however, much damage has been done to otherwise excellent structures because the waterproofing cracked and broke down under strain. To overcome this defect, the Richardson Research Laboratories, after years of laborious investigation, have at last produced a waterproofing bitumen which in spite of strain is always flexible and permanent.

This unique product, Viskalt, was blended to meet the requirements for the first basic material of a permanent roof; namely:

> A pliant, durable, adhesive waterproofing bitumen free from destructive chemical elements and absolutely impervious to water.

The second essential material is, of course, a felt foundation which in spite of severe weathering, will permanently hold this bitumen fast to the roof.

Pliant under stress

In order to keep the waterproofing layer continuous and unbroken even under stress, it was necessary to combine properly from the highest grade raw materials the actual chemical ingredients of the bitumen.

As a result of this method, Viskalt, even through a remarkably wide variety of above grade and below grade uses, remains constantly pliant under stress. By comparing Viskalt with ordinary bitumens, you can readily see why this is so.

First, because ordinary bitumens contain ingredients that evaporate at sun or working temperatures, they quickly become dry and brittle. Viskalt, on the other hand, even when maintained for five hours at a temperature of 325° shows an evaporation of less than ½ of 1%, and still remains pliant.

Second, ordinary bitumens crumble or crack when subject to tension or pressure. But Viskalt, as shown by the ductility test, is internally knitted together to resist such strains.

Third, without the aid of a fluxing agent, ordinary bitumens are not highly adhesive. Viskalt, however, as proved by actual use, binds itself fast both to the felt and to the structure.

Fourth, ordinary bitumens are extremely brittle at even 40°F. and flow at summer temperatures. Viskalt on the contrary, being only slightly susceptible to such ranges of temperature, remains firm yet pliant under stress.

As you can see from these facts, Viskalt is prepared to meet the exacting requirements of waterproofing in modern construction. Whether your job for it be on the roof or in the foundation, you may feel absolutely confident that Viskalt will remain *permanently* a continuous, unbroken layer absolutely impervious to water.

For further facts about the basic principles of permanent roof construction, consult the article for next month.

Viskalt is made by a firm backed by over fifty years of manufacturing experience. There is a Viskalt compound for every waterproofing need. For complete specifications just write the Construction Materials Division, Dept. 44-H

The RICHARDSON COMPANY

Dept. 44-H Lockland (Cincinnati) Ohio
Melrose Park (Chicago) Illinois. New Orleans, La.

Viskalt
Pliant Under Stress

RICHARDSON Product
(1868)
From the makers of Richardson Roofing (including Flex-a-tile Housetops), Viskote, Wall Board and similar products

© 1923, The Richardson Company

GEORGE DOWMAN

610-611 Walton Building, Atlanta, Ga.

YOU CAN VENTILATE AT LOW COST WITH CALLAHAN SASH OPERATORS

Seven Callahan Features

Convenience
Economy *Compactness*
Safety *Neatness*
Tightness *Ease*

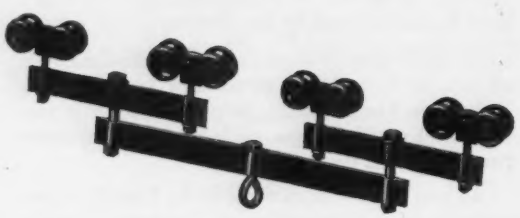
Invigorating fresh air, a natural resource to plant production, is yours with only the initial cost of mechanical sash operators. Callahan Sash Operators are built to serve you on any type of pivoted or hinged sash—wood or metal—with practically no maintenance expense.

Tell us of your desires—your difficulties—whether you have old or new buildings under consideration. Our specialized experience is at your disposal without obligation.

THE T. J. CALLAHAN COMPANY

803 S. PERRY ST. DAYTON, OHIO

WAGNER OVERHEAD CONVEYING EQUIPMENT



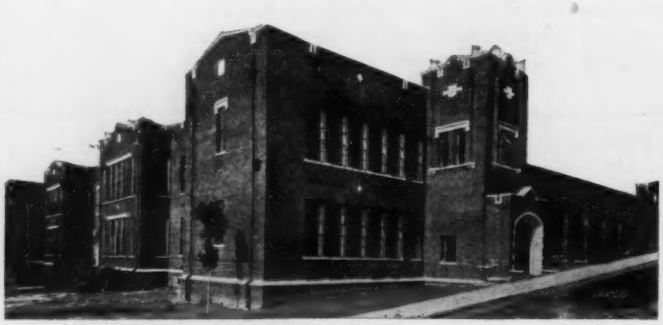
IS IDEALLY ADAPTABLE TO COTTON MILL OPERATIONS
CONSERVES LABOR---SAVES TIME AND FLOOR SPACE

Do your trucking on the ceiling and consolidate your conveying and hoisting operations.

Wagner Equipment includes a complete line of Switches, Crossovers, Curves, and Cranes. Carriers are equipped with high grade roller bearings and can be furnished with "Hyatt" Roller Bearings if desired.

Write for Catalogue

Wagner Manufacturing Company, Cedar Falls, Iowa.



Daniel & Bentell, Architects;
A. Ten Eyck Brown, Supv. Arch.;
Barge Thompson Co., Contractors;
} Atlanta, Ga.

BOCA SOLID STEEL SASH

This illustration shows English Avenue Public High School, Atlanta, Ga. BOCA Steel Sash, equipped with top, sliding ventilators are installed in this building.

You can depend upon BOCA Steel Sash when installed in any type of building. Approved by the National Board of Fire Underwriters, this sash insures protection against the ravages of fire.

Other advantages of this sash are (1) Ventilators are equipped with three point weathering contact, which makes them 100% storm proof. (2) The patented lock joint at all intersecting members gives a most rigid and substantial construction.

Catalogue on request.

THE BOGERT & CARLOUGH CO.

Paterson, N. J.

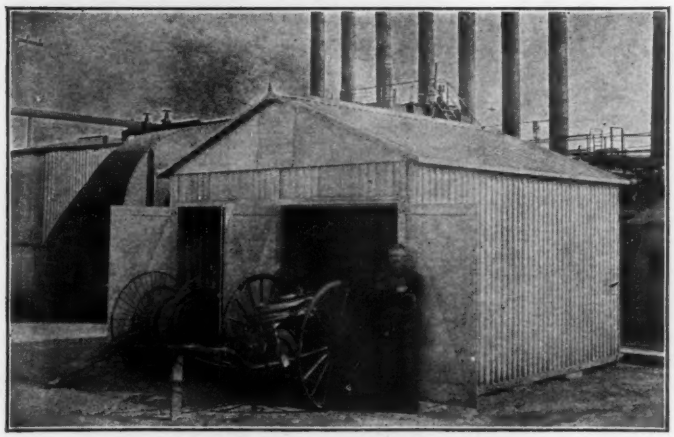
Southern Selling Agent for the Products on These

CONTRACTORS AND SALES ENGINEERS

ARE YOU READY TO FIGHT FIRE?

The Enemy To Your Prosperity

Be Efficiently Equipped When the Alarm Sounds By Keeping Your Apparatus in a MARYLAND METAL BUILDING



Hose Reel House—Now in operation
Furnished in the Size You Require

FOR SURE PROTECTION AND SERVICE

MARYLAND METAL BUILDINGS are constructed of the Rust-resisting

Lyonore Metal

They are Fire-proof, Lightning-proof and Weather-proof — Preventing Damage to Equipment and Rotting of Hose; thus, Insuring against its Bursting when Every Minute Means the Saving of Thousands of Dollars worth of Property.

Write for Plans and Estimates

MARYLAND METAL BUILDING COMPANY

RACE AND McCOMAS STREETS
BALTIMORE, MD.

—SECTIONAL METAL BUILDINGS FOR EVERY PURPOSE—

VARIETY FIRE DOOR COMPANY

61 CROSS-HORIZONTAL FOLDING DOORS
ERECTED ON POSTS 7½ INCHES x 7½ INCHES
AMERICAN RAILWAY EXPRESS COMPANY'S BLDG.
CHICAGO, ILLINOIS

MANUFACTURERS OF A
COMPLETE LINE OF LABELED
FIRE DOORS
ROLLING STEEL DOORS
HOLLOW METAL DOORS
KALAMINE DOORS
SAINO DOORS
VAMANCO COUNTER BALANCED
ELEVATOR DOORS
VARCLAD COUNTER BALANCED
ELEVATOR DOORS
TIN CLAD DOORS
PRESSED STEEL FRAMES
STEEL STOREROOM DOORS

VARIETY FIRE DOORS

2958 CARROLL AVE. CHICAGO, ILL.

Pages—Quality Products plus "Dowman Service"

Distributor Service

BOSTON, MASS.
Lewis E. Tracy Co.

CHARLOTTE, N. C.
Charlotte Supply Co.

FALL RIVER, MASS.
Wm. F. Harticon

HOLYOKE, MASS.
J. Russell & Co.

ROCHESTER, N. Y.
F. P. Van Hosen Co.

SYRACUSE, N. Y.
Alexander Grant's Sons & Co.

UTICA, N. Y.
American Hard Wall Plaster Co.

WOONSOCKET, R. I.
Pinault & Choquette

Save the surface and you save all

To Reduce Inaccuracy

ELIMINATE dim light, shadows and glare from your plant interior and you reduce inaccuracy as well as spoilage to a minimum.

OJACO Mill White helps to do this by improving the quality and increasing the quantity of daylight and artificial illumination.

It is unsurpassed as a wall and ceiling finish wherever precision is imperative.

Consult the nearest OJACO Mill White distributor listed opposite for further details, or write to us direct.

Oliver Johnson & Co., Inc.

Paint Makers since 1833

PROVIDENCE, R. I.

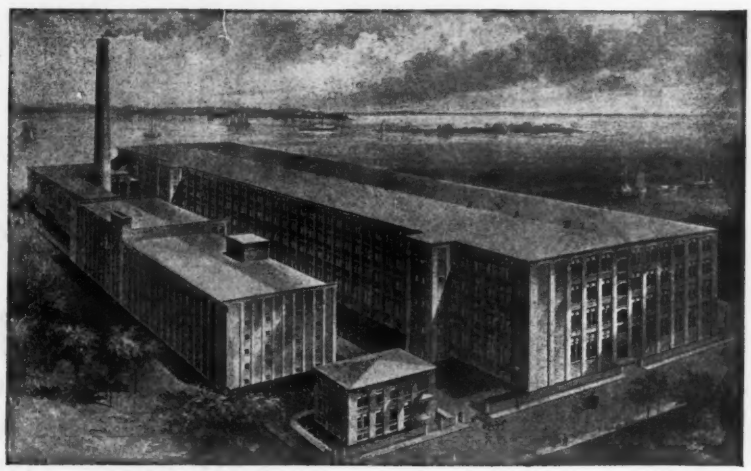
Quissett Mill

New Bedford, Massachusetts

WILLIAM M. BUTLER
President

EDWARD H. COOK
Treasurer

THOMAS F. GLENNON
Agent



COTTON YARNS

Our Carded and Combed Yarns are spun in all numbers and description.

Ply Yarns Our Specialty

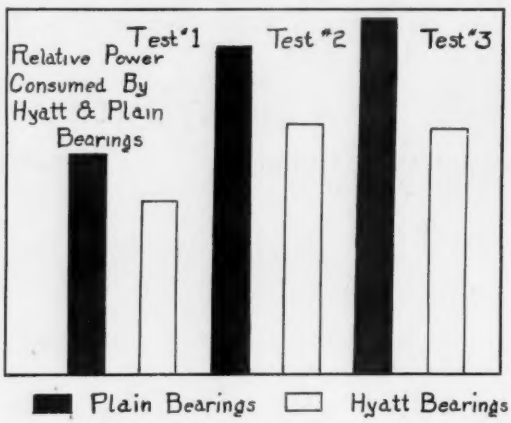
Egyptian—Sea Island—Peelers—Sakelarides

QUISSETT MEANS QUALITY

Ask Your Broker or Communicate Direct

To Lower the Cost per Yard Use Hyatt Bearing Looms

The above chart shows three tests made on looms to determine the power saving effected by the use of Hyatt roller bearings.



Test No. 1

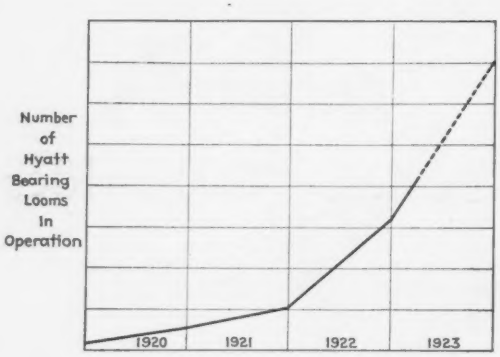
Made at the J. A. Migel Mills on Crompton & Knowles silk looms showed a power saving of 16.3% in favor of Hyatt bearings.

Test No. 2

Made at the Androscoggin Mills on Draper cotton looms showed a power saving of 23% in favor of Hyatt bearings.

Test No. 3

Made at the Hyatt Laboratory on a Draper cotton loom showed a power saving of 27.4% in favor of Hyatt bearings.



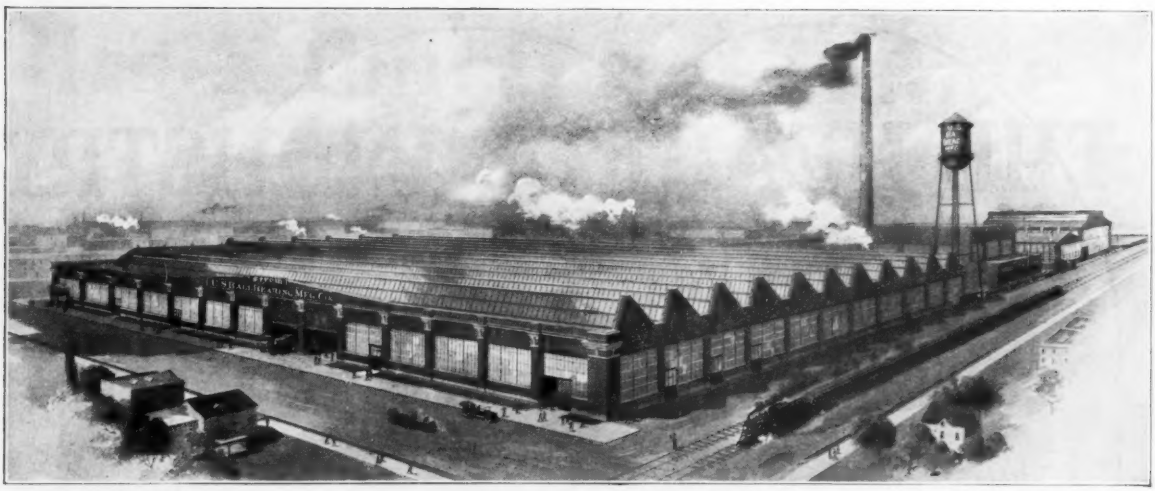
As a result of these tests and the other economies effected by Hyatt bearings, progressive mill men are buying Hyatt bearing looms in ever increasing numbers as shown by the chart below.

In addition to the worth while power saving demonstrated by these tests, Hyatt bearings save at least 80% in lubrication costs and are so durable that they will operate properly throughout the life of a loom without requiring adjustment or replacement.

Secure these economies for your mill by specifying that your looms and other textile machinery be Hyatt equipped.

Hyatt Roller Bearing Company

Newark Detroit Chicago San Francisco
Worcester Milwaukee Huntington Minneapolis Philadelphia
Cleveland Pittsburgh Buffalo Indianapolis



Double-acting thrust bearing, flat seats (grooved races) 2100-F Series

Single-acting thrust bearing, flat seats (grooved races) 1100-F Series

Single-acting, self-aligning thrust bearing 1100 Series

Single-acting, self-aligning thrust bearing, leveling washer. 1100-U Series

Double-acting, self-aligning thrust bearing, leveling washers 2100-U Series

Service in Production Emergencies

There is no business but what occasionally encounters Production Emergencies.

And that is the time when Service is appreciated.

Our plant is working to capacity to produce quality ball bearings to keep our stock complete for quick shipments, as well as to fill orders on our books.

Whether you are a customer or not, this emergency service is at your command, as is also the assistance of our corps of ball bearing experts in solving your problems.

This service does not end with the production of high grade ball bearings and their correct installation. It is followed by a keen interest in the successful performance of every bearing throughout its life.

Strom BALL BEARINGS

"Wherever a Shaft Turns"

U. S. BALL BEARING MFG. CO.
4544 Palmer Street, Chicago, Ill.

Single-row deep-groove Standard type, radial bearing

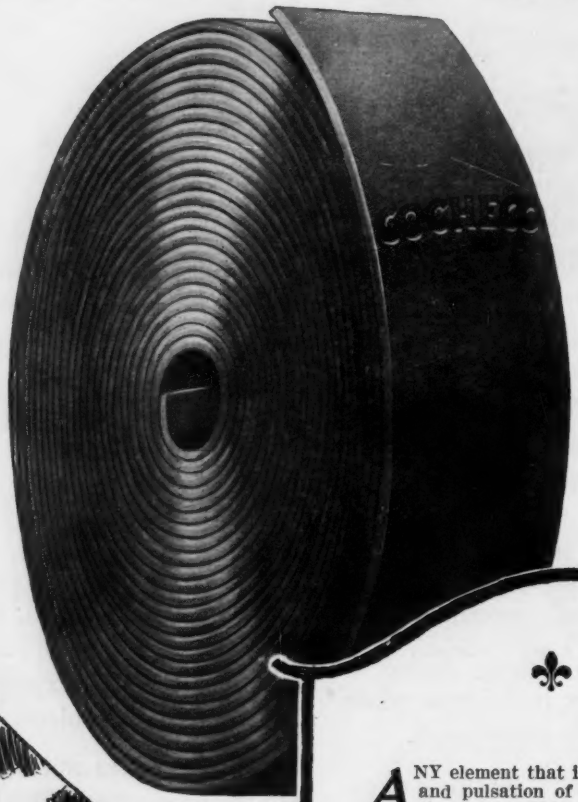
Double-row, deep-groove Standard type, radial bearing

Angular contact bearing, combination radial and thrust

Double-row, maximum type, radial bearing

Single-row, maximum type, radial bearing

THE HEART OF INDUSTRY



COCHECO BELTING

ANY element that is vital to the throb and pulsation of continuous production may well be termed "The Heart of Industry."

This being true, what more vital element in production can be named than Belting?

We claim for Cocheco Leather Belting the highest standard of excellence that an efficient organization, a thoroughly up-to-date plant and 80 years' experience in the manufacture of leather belting can produce.

We can refer you to a host of satisfied users who will substantiate our claim that Cocheco Leather Belting is of the *highest* quality and will render *longer service.*

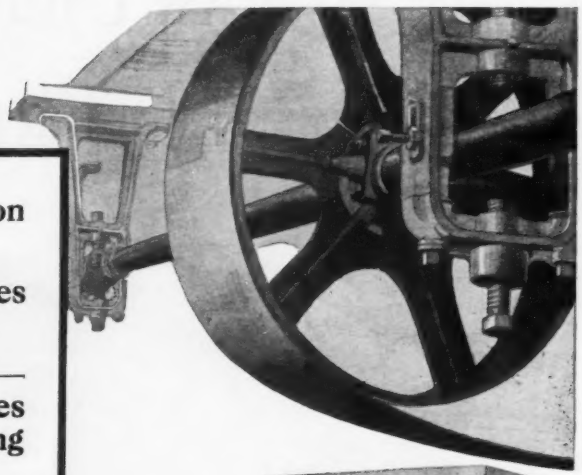
Our handsome illustrated catalog, full of practical belting information, will be sent to you upon request.

I. B. WILLIAMS & SONS

DOVER, NEW HAMPSHIRE, U. S. A.

1416 N. FRANKLIN ST., CHICAGO, ILL.
157 SUMMER ST., BOSTON, MASS.
71-73 MURRAY ST., NEW YORK, N. Y.

"It's a Cinch to Change to HYATT BEARINGS"



They go on quickly and stay on for the life of the plant.

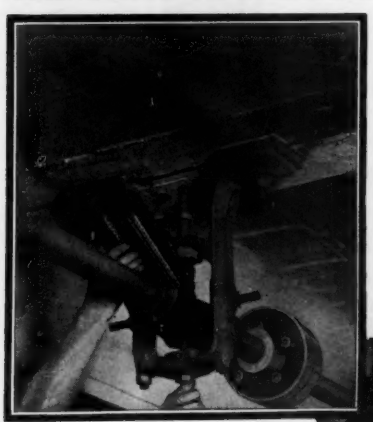
The fact that they're split makes them easy to install.

No need to hold up production—take off the old plain bearing boxes—put on the Hyatt roller bearing boxes.

You will immediately begin to save 15% of your total power costs and will only need to oil your line shaft bearings three or four times a year.

Save power, time, oil and worry.

Get satisfactory service—install Hyatt line shaft bearings.



'Phone the nearest mill supply dealer

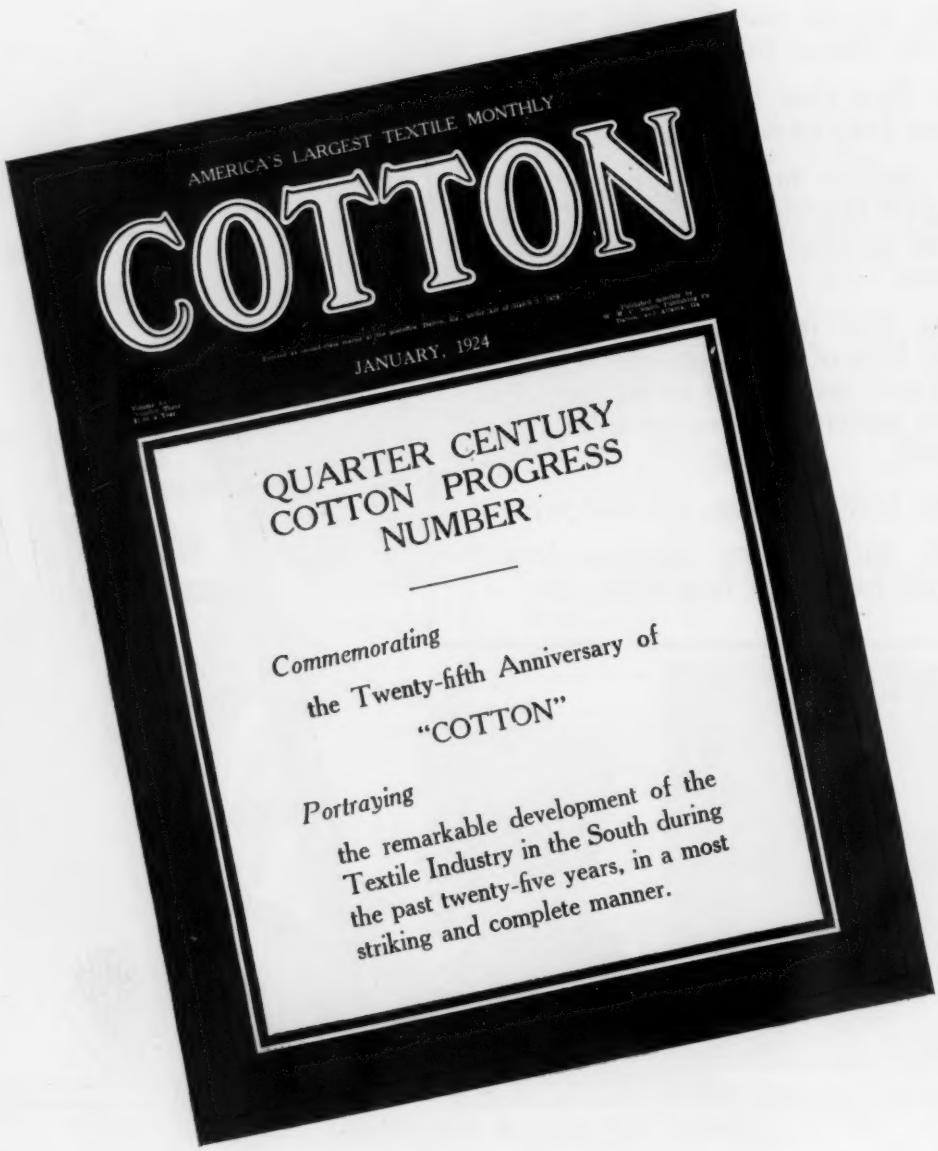
Hyatt Roller Bearing Company

Newark, N. J.

COMING—

An Unusual Issue

January 1924



MORSE SILENT CHAIN DRIVES

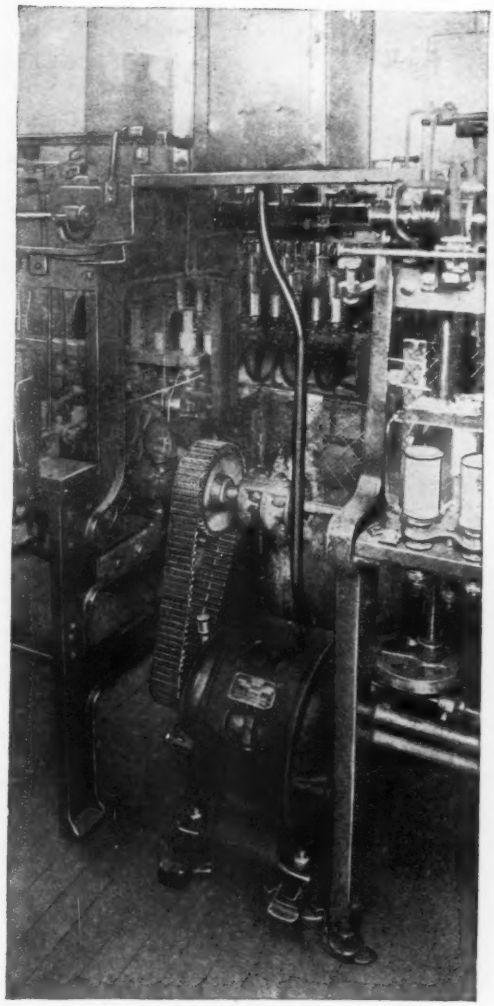
Locating "the drive" where it pays the most profits

Morse Silent Chain Drives can be conveniently applied to meet almost any condition. Where space is limited, or where driver and driven shafts are not adjustable to center distances, Morse Silent Chain Drives quickly remedy the situation.

Morse Silent Chain Drives perform with extraordinary results on short centers. This fact permits locating and utilizing the drive most profitably and efficiently. Costly space is saved, better working conditions promoted.

Morse Silent Chain Drives transmit 98.6% sustained efficiency, throughout the life of the chain. Provide positive speed ratio between driver and driven, run cool and clear, have greater reliability and long life.

Morse Engineers, familiar with all phases of Transmission problems, are at your service in bringing "Morse Profits" to your own plant.



Morse Silent Chain Driving spinning frames from motors.

MORSE CHAIN CO., ITHACA, N. Y.

There is a Morse Engineer near you

ATLANTA, GA.	702 Candler Bldg., Earl P. Scott & Co.	NEW YORK CITY	30 Church Street
BALTIMORE, MD.	1402 Lexington Bldg.	MINNEAPOLIS, MINN.	413 Third Street, S., Strong-Scott Mfg. Co.
BOSTON, MASS.	141 Milk Street	MONTREAL, QUE., CAN.	St. Nicholas Bldg., Jones & Glassco, Reg'd.
CHARLOTTE, N. C.	404 Commercial Bank Bldg.	PHILADELPHIA, PA.	612 Franklin Trust Bldg.
CHICAGO, ILL.	Merchants Loan & Trust Bldg.	PITTSBURGH, PA.	Westinghouse Bldg.
CLEVELAND, OHIO	421 Engineers Bldg.	SAN FRANCISCO, CAL.	Monadnock Bldg.
DENVER, COLO.	1761 Wazee Street, R. M. Parsons	ST. LOUIS, MO.	Chemical Bldg., Morse Eng. Co.
DETROIT, MICH.	7601 Central Avenue	TORONTO, ONT., CAN.	Bank of Hamilton Bldg., Jones & Glassco, Reg'd.
KANSAS CITY, MO.	Finance Bldg., Morse Eng. Co.	WINNIPEG, MAN., CAN.	Dufferin Street, Strong-Scott Mfg. Co.

Do you know ?

The "Rule of 3"

of Turbine Lubrication

?

It's given on page 32 of "The Lubrication of the Steam Turbine" Published by The Texas Company.

THIS 36-page book has received high praise from operators and builders of turbines. It is not loaded with propaganda for Texaco Turbine Oils.

This book discusses LUBRICATION. In logical sequence these important items are taken up: oiling systems—lubricating methods—effects of heat, water and deposits—cleaning—starting—oil coolers—reduction gears.

NOT a theoretical treatise for students only; but for men interested in turbines and the use of oil. It contains no pretty pictures or long "History of the Turbine" going back to the ancient Greek who discovered its principle. The text pages are all "meat."

"LUBRICATION OF THE STEAM TURBINE" was written by and checked up by men who have observed lubricants at work on all types of turbines.

Interesting enough to read at a sitting.

Important enough to become part of your technical library. Get a copy at once. Use Coupon below—NOW, before some more immediate claim on your time causes you to forget.

—USE THIS COUPON—

THE TEXAS COMPANY, U. S. A.

Texaco Petroleum Products

Dept. S, 17 Battery Place, New York City

OFFICES IN PRINCIPAL CITIES.

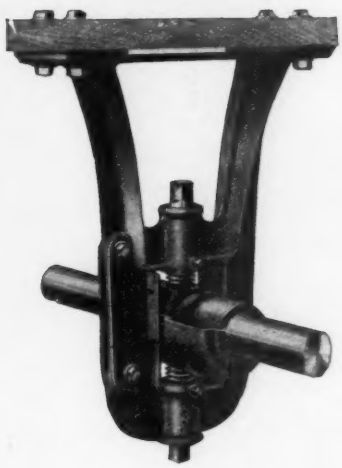
Kindly send me free copy of your book "Lubrication of Steam Turbine."

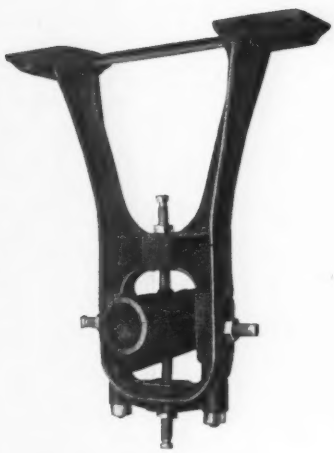
Name ---------- Street ----------

City ---------- State ----------

11-23

DODGE



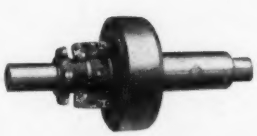


Visit our exhibit at International Textile Exposition, Boston, Mass., Oct. 29th to Nov. 3.

DODGE Means Power Savings

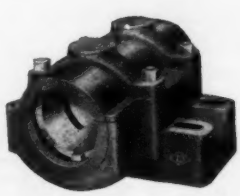
Your power roadbed is an important factor in determining your power costs. Dodge transmitting machinery insures balanced power; balanced power means less friction; less friction means lower costs and increased profits.

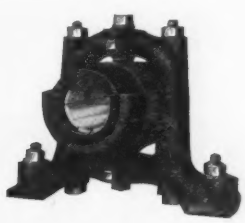
Dodge makes everything for the mechanical transmitting of power. Stock units can be purchased from your local dealer on the immediate delivery basis.



Dodge Manufacturing Corporation

General Office: Mishawaka, Indiana. Works: Mishawaka, Indiana, and Oneida, N. Y.
New York Philadelphia Pittsburgh Boston Cincinnati Newark Chicago
Atlanta Minneapolis St. Louis Houston Seattle San Francisco





Rosemary Damask Finished

Into the 13-acre, 58-building finishing plant of Joseph Bancroft & Sons Co., Wilmington, Delaware, comes Rosemary Damask. Warp and weft have been combined. Now comes that which so often influences first purchase—the finish.

Through the singe, the wash, the process of bleach and "chemic," drying, mercerizing, tentering, calendering and the many smaller, yet relatively as important operations—such as atomizing—each is done accurately and with a minimum of stoppage.

BUTTERWORTH

in the Bancroft Plant

Entirely on Butterworth Finishing Machinery

It was in this plant that the superintendent was asked, "Why do you use Butterworth Machinery?" After a minute's thought, he replied, "Because it seldom is out of order and rarely needs adjusting."

Butterworth Machines are made for all finishing processes

For the asking, you can have the entire 103 years of experience of the Butterworth Organization concentrated on your personal finishing problem.

We will be glad to send you detailed information on the machine in which you are interested. Also we are preparing a series of booklets on finishing and finishing problems. The first two are ready. One is entitled "Mercerization" and the other "Finishing Machinery in Range." If you would like to have copies of these booklets and others as they are issued, just tell us.

H. W. BUTTERWORTH & SONS CO.

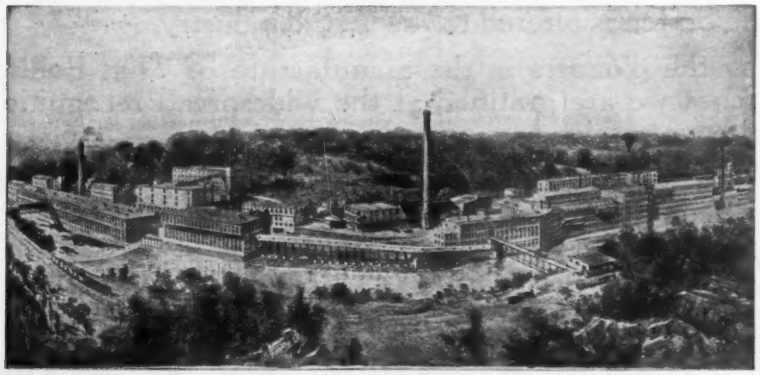
Established 1820

PHILADELPHIA, PA.

Canadian Representative: Hamilton, Ontario, Canada . W. J. Westaway Company.

Providence Office: Turk's Head Building.

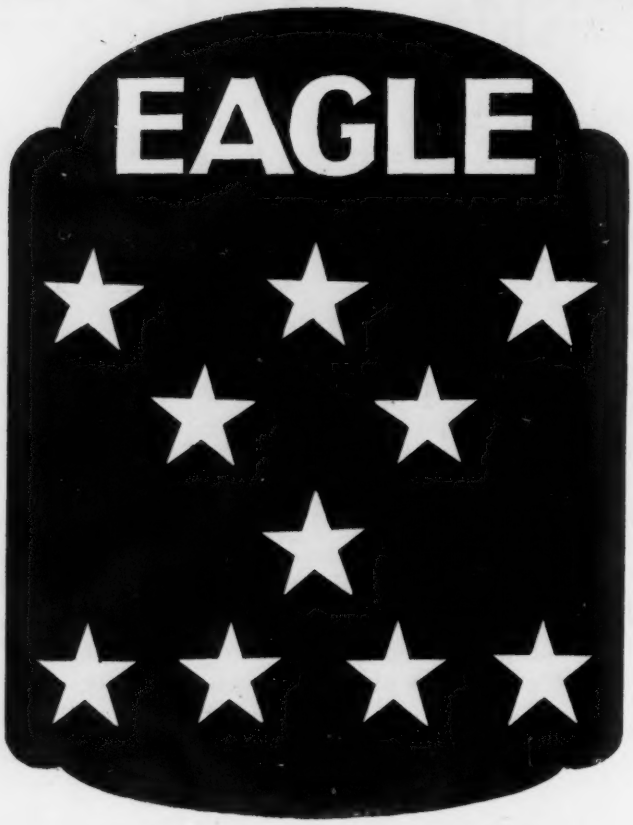
Greenville, S. C. Office: Masonic Temple Building.



Panoramic view of part of the 13-acre Bancroft Plant, near Wilmington, Del.

Finishing MACHINERY

Starch



—and these stars have a meaning—

They signify the different grades in which Thin Boiling Eagle Starch is offered to the textile industry.

Being the pioneers in the manufacture of **Thin Boiling Starches** we are gratified at the widespread recognition they have received.

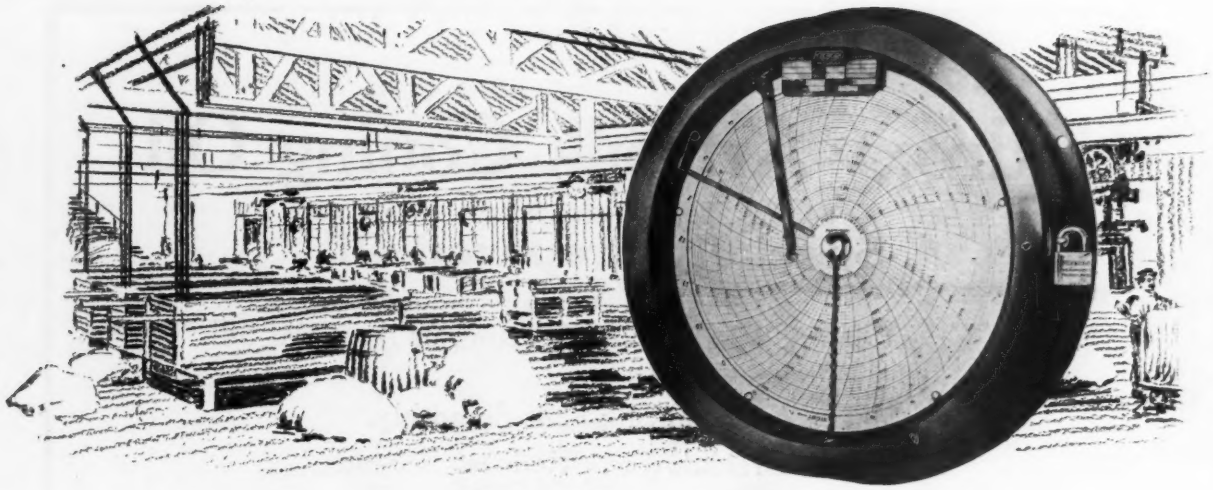
Be sure to select the best grade suited to your work. Our knowledge and experience are at your service.

Corn Products Refining Company

New York

Southern Office *Greenville, S. C.*

Starch



Cut Down Waste

Where It's Most Liable to Occur

In Your Dyeing and Finishing Departments

Careful, constant watch over:

Temperature of the Dye Bath
Temperature in the Bleaching Kier
Temperature in the Crabbing Machine
Temperature in the Fulling Mill
Temperature in the Carbonizer
Temperature in the Soaping Machine
Temperature in the Scouring Bowl
Temperature in the Tenter
Temperature in the Mercerizing Range
Temperature in the Drying Machine
Temperature in the Conditioning Machine

is one sure way to greatly reduce waste in your mill.

Foxboro Recording Thermometers, installed throughout your dyeing and finishing departments, make possible savings that quickly mount to thousands of dollars.

The clean, accurate Foxboro records enable you to use temperature as carefully as you use valuable raw materials.

Foxboro Recording Thermometers are built to give dependable textile mill service for years to come. They are designed by engineers who know textile processes.

Write us for Bulletin AS-104-1 giving complete information.

THE FOXBORO CO., Inc.

FOXBORO, MASS. **U. S. A.**

New York Chicago Boston Philadelphia Pittsburgh
Cleveland Rochester Tulsa
Los Angeles San Francisco Portland, Ore.
Birmingham, Brown-Marx Bldg.

FOXBORO

REG. U. S. PAT. OFF.

THE COMPASS OF INDUSTRY

5615

Hydroxy Art Silk Coning Oil

A Specially Prepared Oil

Used in the Coning, Winding, and Knitting of Artificial Silk

Makes Artificial Silk Knit Smoothly.
Eliminates Breakdowns. Reduces Seconds.
Washes out easily at low temperature.

Therefore—
Dyeing and Bleaching is even and shades brighter.

Sample sent on request—no charge.

Developene (There Is no "Just as Good")

Makes a rusty Black stocking turn deep Black.

Kali Chlorine Neutralizer

An Anti-chlor—prevents tender bleached goods.

All chemicals for the Dye House—
All oils—Sulphonated—Turkey Red—
Neatsfoot, Olive, etc.

KALI MANUFACTURING CO.

1410 No. Front St., Philadelphia, Pa.

Sole Manufacturers of "Hydroxy Oils" Patented.

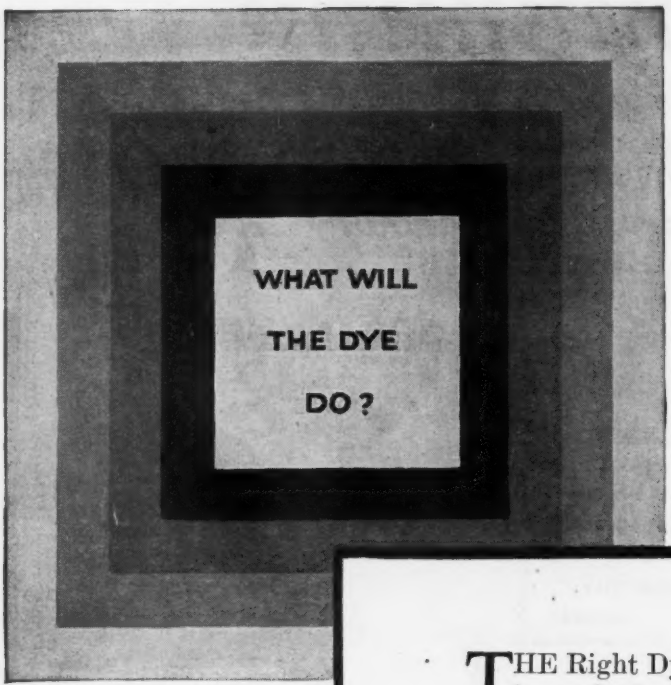
Why are so many weavers happy now?

"HAWK"
THIN BOILING
STARCH
MAKES
HEALTHY
WARPS!

SOLUBLE
WHEAT STARCH
BINDER
MAKES GOOD
WARPS BETTER!

STEIN, HALL & CO., INC.
61 BROADWAY, NEW YORK.
BOSTON PHILADELPHIA
PROVIDENCE TROY
CHICAGO CHARLOTTE, N. C.

QUALITY AND SERVICE SINCE 1866



THE Right Dye—a "National" Dye is made by an organization that works close to you.

"National" keeps a large supply of dyes at each branch office so you can get delivery almost over night. "National" keeps its laboratories ready at all times to help you work out your problems.

"National" has the right dye service as well as the right dyes! Put your dye problems up to National.

NATIONAL ANILINE CHEMICAL CO., Inc.

40 Rector Street New York, N. Y.

Boston
Providence
Hartford

Philadelphia
Chicago
Charlotte

San Francisco
Montreal
Toronto

"NATIONAL" DYES
FOR TEXTILES

NATIONAL U.S.A. DYES

COTTON

Published Monthly by

W. R. C. Smith Publishing Co., Dalton and Atlanta, Ga.

L. L. ARNOLD, Editor. R. W. PHILIP, Associate Editor.

Editorial and Advertising Departments, Grant Building, Atlanta, Ga. Subscription price, $1.00 per year; Canada, $1.50 a year; Foreign, $2.00 a year. Entered at the Dalton, Ga., postoffice as second-class matter.

Contributions to the columns of Cotton are solicited and paid for after publication. The name of contributors need not necessarily be used, but must accompany all manuscripts.

Orders for any change in advertising must reach Atlanta previous to the tenth of the month preceding month of issue, otherwise publishers cannot be responsible for changes.

When changing address, notify us, not the postmaster. Always give the old address as well as the new one.

Volume 88 Member Associated Business Papers, Inc. Member Audit Bureau of Circulation. No. 1

CONTENTS

EDITORIAL—

Trailing the Value of the Railroads 3
Do You Want Lower Taxes? 4

GENERAL AND TECHNICAL—

Human Relationships in Industry 5
Southern Textile Association Holds Fall Meeting at Augusta 6
"Mutual Problems of the Mill and Finisher".... 10
"Education in Our Mill Villages" 13
"The Future Prospects and Possibilities of Superintendents and Overseers in Southern Cotton Mills" 15
Intangibles in Manufacturing 17
Promises or Accomplishments? 18
Towels and Toweling 19
The M. M. and the Dynamite Hands 25
Georgia Cotton Manufacturers Hold Meeting..... 26
What the Southern Mills Are Doing 28
The New England Mill Situation 30
Cotton Comment 32
Notes About Men You Know 34
An Old-Timer Says— 37

HOW OTHER MEN MANAGE—

Likes Filling Wind 39
Book Knowledge and Education 39
Lap Variation and Its Results 41
Frame Speed and Cone Outline 41
Analysis of a Ribbon 43
A Note for the Superintendent 45
Laying in Threads at the Slasher Comb 47
Notes on Combing 47
Answers Finishing Questions 53
Are Drop Wires Positive? 53
Suggests Using Spools on Slubbers 55
Where the Roving Stretches 55
Some More on Balanced Twist 55
The Employment Manager 55
Another Opinion on Slashing Questions..... 58
Some Bleaching Troubles 61
Asks for Spinning Room Report Forms 62
Suggestions on Flyers 62
Likes the 60-Yard Cut Basis 63
Modernized Equipment Pays 63
A Loom Production Question 63
A Question on Short Chain Beaming 63
The Need for Exercise 65
Balancing Flyers 67
Light Versus Heavy Laps 68

KNITTING SECTION—

Developments in Loop Wheel Knitting 71
The Possibilities of a Hosiery Combine 77
The Yarn Market 78
The Knit Goods Market 81
Among the Knitting Mills 86
Justice the Keynote 88

MATHIESON Chemicals

Prompt Deliveries Direct from Our Works

THE location of our plant at Saltville, Va., makes it the logical source of supply for all Southern consumers of Soda products.

Southern textile mills using Mathieson Chemicals are assured of fresh materials and prompt deliveries at a considerable saving in transportation charges.

Let us serve you direct from the works in both carload and less-than-carload quantities.

The MATHIESON ALKALI WORKS *Inc.*
25 WEST 43rd STREET NEW YORK CITY

PHILADELPHIA
PROVIDENCE

CHICAGO
CHARLOTTE

EAGLE THISTLE PRODUCTS

Deal Direct with the Manufacturer

Bicarbonate of Soda
Liquid Chlorine-Caustic Soda
Sesquicarbonate of Soda
Bleaching Powder-Soda Ash

With the Publishers—

Some Comments by Readers

The secretary of a large Georgia cotton mill writes:

"Have been a regular subscriber to your monthly magazine for a number of years and have learned to consider it one of the most helpful as well as the most reliable of textile papers."

An operating executive of a Mississippi mill writes:

"A single copy of COTTON is enough to keep an overseer or superintendent busy thinking and applying for a month, that is, if he does it right, or as one man puts it—'A good month's work is in every copy of COTTON.'"

Another operating executive connected with a large New Hampshire mill says in a recent letter:

"I have been a consistent reader of your magazine, which I find to be the best and most interesting magazine among the many textile journals."

A department manager in a Massachusetts mill, speaking of the Old Timer Department says:

"I have read his articles and sayings ever since you started publishing them and must say he hits the nail on the head. I have found that the thoughts he starts up lead to other things equally important. His articles are like good medicine, they never taste good but they do the work."

An assistant superintendent of a group of Georgia mills, in sending in his check for a renewal subscription, writes:

"I wish to say that I consider COTTON the best textile magazine published and I might say, such seems to be the consensus of opinion of all those I have heard express themselves."

An operating executive in a North Carolina mill writes us:

"If you can, I will be very glad, indeed, if you will spare a little more space in COTTON for Old Timer to talk. It is so encouraging to sit down after a hard day's work and see what he has to say."

A manager of a Massachusetts finishing plant says:

"I have subscribed to COTTON for a good many years and I look for it each month."

The vice-president and general manager of a group of southern mills, in speaking of a certain article in a certain issue, says:

"I have made it a special point that all of our overseers have read this article, at the same time I advised them to subscribe to COTTON as I think it's the most practical publication that comes to our office, and we have several."

The superintendent of a Texas mill writes:

"I consider the technical articles found in COTTON far superior to those found in any other textile magazine."

The superintendent of a Massachusetts mill writes to inquire if a change in address which he ordered had been properly made. He continues:

"I always miss very much my number of COTTON. I did not receive the September number and was wondering if same had been sent to my previous address. I would appreciate it very much if you would send me a September number."

The superintendent of a Georgia mill writes:

"I herewith enclose check to cover my renewal subscription, so you can give it to the boss. Tell him to be darn sure never to let my subscription expire for COTTON is the best paper published."

An executive in New York state writes:

"Enclosed you will find my subscription for the next two years for your most valuable monthly journal. I say valuable because anyone who is connected with textile mills cannot afford to be without it. There is always something to learn and I believe anyone subscribing to COTTON certainly gets his money's worth. There are lots of little things that occur every day which your magazine helps us to overcome."

AMONG COTTON'S READERS

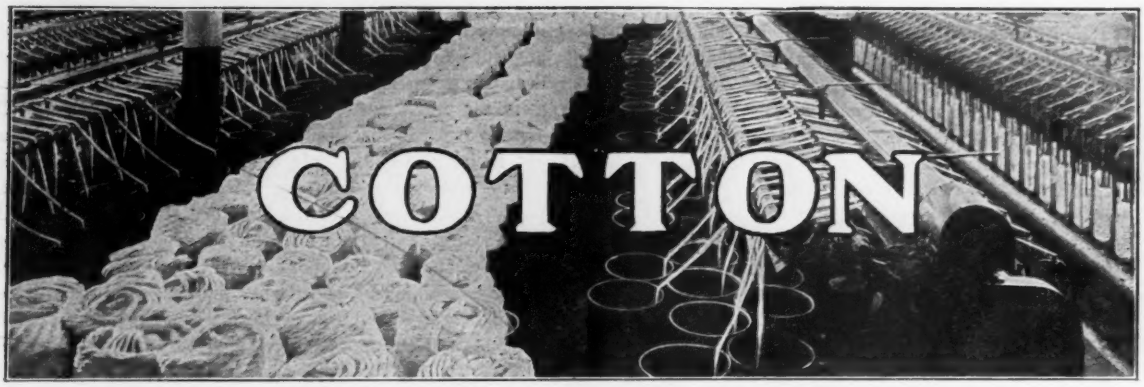
C. V. Truitt, LaGrange, Ga.

President Unity Cotton Mills, Unity Spinning Mills, Elm City Cotton Mills, Hillside Cotton Mills, Valley Waste Mills, LaGrange, Ga.

Treasurer Manchester Cotton Mills, Manchester, Ga.; Milstead Mfg. Company, Milstead, Ga. President Milstead Railroad Co., Conyers, Ga.

"I consider COTTON one of the most useful publications that come into the office on account of the valuable information derived from reading the discussions by practical men of various matters connected with the textile industry."

C. V. Truitt



November, Nineteen-Twenty-Three

Trailing the Value of the Railroads.

For more than ten years now the Federal Government has been engaged in the biggest fact-finding operation on record. It has to do with the railroads, primarily with their valuation. The extent of this study is indicated by its cost. On it the Government has spent more than $20,000,000. The railroads have expended, chiefly in the form of assistance given at the direction of the Government, about $65,000,000. The completion of the task will cost many more millions.

And the task may extend through another decade of time. For it hasn't proved to be the simple one which its sponsors of a dozen years ago claimed it should be. They, as typified by Senator LaFollette, of Wisconsin, said that it could be done in two or three years and at a cost of only two or three millions.

Much has been done. The accounting and inventory making parts of the undertaking are about complete. The Interstate Commerce Commission has made tentative findings covering more than 300 properties. These, however, in the main are the smaller properties. On the whole they do not comprise much more than one-fourth of all the railroad mileage in the country. Tentative findings for most of the big railway systems are yet to come and all of these tentative findings must be followed by so-called "final" valuations. And there is a total of nearly 2,000 properties to be reported on.

Even with the "final valuations," which have been made for a few properties, it is well for a student of the subject to be on his guard. Only in a technical sense are they really "final." For they fix values as of June 30, 1914, only. Before they can be applied they must be brought up to date. Even then they will be subject to court review, which may take years to complete.

The findings as of June 30, 1914, do not state what the railroads passed upon are worth. They merely relate to original cost to date, cost of reproduction new, and cost of reproduction, less depreciation; with separate reports on cost and present value of land. In each case there is a finding of total or single-sum value. This, however, is specified as being "for rate making purposes" only.

Hence the figures that are being frequently announced are subject to great change before they ultimately can be treated as settled ones. The commission, of course, has fixed a "tentative" value for all the railroads. This, however, is another matter, but it may be much affected ultimately by the valuation work carried on in detail.

Many very subtle questions enter into fixing the value of the railroads—so many and so fundamental that a wide divergence of opinion has developed. The spokesmen for the railroads contend for the application of principles which would result in the ultimate value of all the railroads being fixed probably at from thirty to thirty-five billions of dollars. Others, such as those making up what is coming to be known as the "LaFollette group" of outsiders, contend for principles which probably would limit the sum to twelve billions or less. The commission is taking a somewhat intermediary course between the contentions of the two extremes.

The issues involved are quite important, for the reason that railroad valuation is likely to be an important issue in national politics during the next several years. Already it is involved with rate-making. It bears most pointedly on the question of government ownership. One of the prime objections to this latter is the great cost. Hence the lower the value fixed for the railroads, the less this objection has weight. Also by beating down railroad value the more inclined will be those who own the railroads to let the public take them.

And the issues largely revolve around what is meant by such words as "cost" and "value." Is the "original cost to date" of the railroads measured by the money actually put into them for all purposes? The commission says it is not but the low valuationists go further than the commission as to that. They would allow only for the cost, measured by the "prudent investment" rule, of the physical property in possession of the railroads. They would allow nothing for appreciation in the value of different items or for advances in general price levels. Yet they would make big deductions, as the commission does, for depreciation.

And they would make "original cost" thus arrived at the cost of reproduction new. The railroads contend that cost of reproduction should be actual replacement cost, whatever it be. They also contend for promotion cost and for specific allowances for intangibles, such as going concern and good will values. But the commission holds only for costs arrived at by the "reasonable" investment rule, based on average prices prevailing five and ten years prior to June 30, 1914.

The commission's single-sum values "for rate-making purposes" are arrived at by the "judgment" process. That is to say, no uniform rules, standards or bases are employ-

ed; only undefined considerations of all things are given. Generally these single-sum findings run fairly close to cost of reproduction, less depreciation, plus the present value of land, with a small addition for other things.

The commission doesn't claim that these are *the* values of the properties passed upon. It reserves the right to fix other values for purposes other than rate-making. It has not yet decided whether anything will be allowed on account of the changed status of the dollar since 1914, though there will be additions for betterments made since that time.

Many of the commission's findings and methods are disputed by both extremes of outside contention, the radicals, so to speak, and the owners of the railroads. The Supreme Court ultimately may have to settle these issues.

Meantime, it is well to be cautious in adjudging offhand statements about what the railroads are worth. After ten years the Interstate Commerce Commission has been able to determine the matter only partially and uncertainly. But it is well to watch the agitation which for the next year or two is likely to be intense regarding the subject. Much of this agitation evidently has not the attainment of accurate values in mind. It is not aimed primarily at securing lower rates under a system of private ownership and operation of the railroads. Its aim, though this generally is concealed, is government ownership.

No matter what it ultimately is shown to be, the total value of the railroads cannot have a great deal to do with rates, even though fair earnings on the basis of value is now decreed by law. If the contentions as to value put forth by the political radicals were sustained, that alone could bring about reductions of not more than six or seven per cent in present rates. For, taking the railroads as a whole, present high rates are due in greater part to many other things than net returns to the owners of the properties, to such things as greatly increased wage scales and the cost of fuel and maintenance.

Do You Want Lower Taxes?

High officials in Washington are not optimistic concerning the prospect for any substantial lowering of Federal taxes, though the balance sheet for the last fiscal year did show a good surplus and the budget bureau is claiming further large economies. In truth, many years are likely to pass before Federal taxation, as a whole, ever again is lower than at the present time.

But the Federal Government can make this claim: It has reduced its part of the general tax burden. Other governmental agencies have not done so. Of forty-eight States in the Union only one reduced its tax burden this year. But the State in question was seized with the road-building craze long before others were affected by it. That State's road system is now about complete; hence the State can retrench fiscally.

State taxes as a whole show greater increase, as compared with pre-war standards, than do Federal taxes at the present time. And local taxes, that is county, city and school district, have increased more than state taxes. Worse still, state and local taxes still are on the upward trend, with no clear indication that even a cessation of the tide's rising is in prospect.

Therefore the question of taxes is resolving itself into a few simple categories. If those leaders who view Federal affairs sanely are let alone there will be no further increases of note in Federal taxes, though there is no likelihood of any substantial reduction being made. But if the public demands more than it is getting from the Federal government the public must be ready to pay the bill, which will express itself in increased taxes. "The average citizen has got to learn that the only money the government has is what it collects through taxes which he, the average citizen, pays," said Secretary of the Treasury Mellon recently. If the Treasury is to be drawn on for big bonuses and for larger yields from the "pork barrel" then higher taxes becomes unavoidable. And during the next year or two the Federal Government is going to face much greater pressure in those respects than it is going to be pressed with practical suggestions for curbing expenditure.

But whatever the Federal Government does, the great problem of taxes is going to center elsewhere; it is going to lie with state and local government. For Federal taxes now, with all the paying for the late war which is being done and all the tremendous expansion that the Federal establishment has known in recent years, are considerably less than other taxes. It is needless to put the brakes on there if ever widening latitude is permitted elsewhere.

Those who in their dealings with the tax collectors are made phenomenally aware of the present tax burden would be wise if they took pains to impress upon others the truth that in the end all of us bear our due parts of that burden whether or not we are conscious of it. If landlords could demonstrate to tenants the large proportions of increased rents accreditable to taxes and if retailers likewise should show that every dollar taken in by them includes from 5 to 25 cents taxes, there would be changed opinion on this important subject.

Taxes now constitute about the biggest problem we have. It is only in a sense political. It has become a tremendous economic problem, for it has big bearing on credit, trade and industrial expansion, and, in fact, virtually every aspect of life and activity.

STATEMENT

of the ownership, management, circulation, etc., required by the act of Congress of August 24, 1912, of COTTON, published monthly at Dalton, Ga., for October 1st, 1923.

State of Georgia, County of Fulton.

Before me, a Notary Public, in and for the State and County aforesaid, personally appeared W. J. Rooke, who, having been duly sworn according to law, deposes and says that he is the Business Manager of COTTON, and that the following is to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, W. R. C. Smith Publishing Co., Atlanta, Ga.; Editor, L. L. Arnold, Atlanta, Ga.; Business Manager, W. J. Rooke, Atlanta, Ga.

2. That the owners are, W. R. C. Smith, Atlanta, Ga.; E. P. Smith, Atlanta, Ga.; W. S. Cushion, Cleveland, O.; O. A. Sharpless, Atlanta, Ga.; J. C. Martin, Atlanta, Ga.; H. H. Kelley, Atlanta, Ga.; W. J. Rooke, Atlanta, Ga.; T. W. McAllister, Atlanta, Ga.; L. L. Arnold, Atlanta, Ga.; W. O. Rogers, Atlanta, Ga.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or any other security holders are: None.

4. That the two paragraphs next above giving the names of the owners, stockholders, and security holders as they appear upon the books of the company but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bonafide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him. W. J. ROOKE, Bus. Mgr.

Sworn to and subscribed before me this 29th day of September, 1923.

(Seal) JOHN C. MARTIN,
Notary Public.

My commission expires June 20, 1924.

Human Relationships in Industry

BY W. M. McLAURINE

In this modern day of efficiency and competition, there are many and various means and methods used to aid the individual or corporation to become more able to meet the stress and strain of daily demands.

Machines are studied and production is measured. Engineers of many kinds are employed to give advice. Lectures are given and moving pictures are shown demonstrating the methods used here and there, supposedly embodying new ideas.

Many men have thought that automatic machines would solve many of the labor problems and many of the technical problems related therewith, but after years of experience and observation, those who are really alert are bold enough to say that back of the machine and paramount in comparison with the highest type of machine that can be devised is the human factor. To state it differently, the human element in any factory is of more concern and more valuable than any machine or group. That class of help that stands behind these big, automatic and almost human pieces of mechanism, which is happy, healthy, loyal and eager to push on, is a very valuable asset. In days that are past, many were the groups of such people, but they worked in smaller groups and came in daily contact with the owner or director of the plant. Machines and modern demands have made big organizations necessary, have made specialization necessary, and have closeted the owner or director in heavy brain disturbances of competitive and financial strain. The direction of the work has been handed on to a superintendent, and he in turn has transmitted it to foremen, and they, oft-time, to subforemen, and under these in highly specialized departments the work is executed.

There are long gaps between the once superintendent and the help. These gaps are spanned by the superintendent, foremen and subforemen. They are the great masters of production; the human engineers of the industrial organization. They stand with one hand in that of the management and one in that of operatives. They interpret labor to the management and management to labor. Someone has said, "They are the Sergeant-Majors of industry." They make or break; they add or subtract; they build or destroy. The great responsibility of progress rests upon them. What has been done in a definite, concrete, constructive way to enable them to discharge their duties better and get a greater vision of the field of opportunities that lies before them? Many things are done, and have been done, and they are all good. No one has a greater appreciation of these than the writer, but there is still something of value that can be added to the already accumulated good, and that is the organization of a conference group of superintendent and foremen and subforemen with the view of studying a few things *through*, with all men on the level, and everyone being allowed to bring forth any constructive suggestion or criticize anything that may seem undesirable for the welfare of the organization. It would be well to offer a modifying clause to this statement, by saying only those things that come within the province of the group, and can be remedied or put into operation by the group, should be studied or discussed.

There may be some querulous attitude of mind in the reader who has come thus far as to what some of these problems are. Nearly all of them are problems tinged with the human element or entirely absorbed by it. To illustrate some are suggested:

Labor Turnover; Cooperation; Leadership or Foremen Qualifications; Tests of Leadership; The Hiring Policy; Induction and Instruction of New Employees; The Interest Factor; The Follow-up and Estimating Value of Help; Accidents; Waste; Records and Reports; Thrift and Health; and many other problems which need not be mentioned here.

The question also may arise, "Why pick on the foreman?" Lawyers, doctors, preachers, teachers and all other people take time off now and then, and get new blood and new ideas and come back "ready and rearing to go," but the foreman and superintendent must stay on the job. The factory must go, production must come out, the demands of society are calling for the necessities. He can't go, so provide a course or a series of meetings for him by helping him to get up his series of problems, and then let the group, unfettered in a dignified and democratic way, proceed to solve them. Make these problems a little different from those that generally come up in the regular meeting. The regular meeting is generally a notation and discussion of some of the shortcomings of some individual or department that have happened and must never happen again. Often, it is a one-sided discussion, and the blame is shifted to someone else, and the new orders are made in mental notes and the meeting is adjourned until the next regular sitting. The writer realizes that this is perhaps an unfair statement of the meeting, but contrast often brings out a point that other means fail to develop at times.

"What then are some of the advantages of a conference method of developing problems?" the reader may ask. Some of the results that may be looked for are, (a) Enlightenment on problems of management; (b) A better interpretation of the company's policies; (c) Increased knowledge of the problems of the factory; (d) Self-analysis; (e) Confidence and respect; (f) Cooperation; (g) Understanding of individual rights and responsibilities; (h) Understanding of mutual rights and responsibilities; (i) More intelligent initiative; (j) Appreciation of problems of others; (k) Coordination of departments; (l) Social consciousness; (m) To inspire loyalty and ambition, and make boosters.

It is not the writer's intention to convey the idea that all of the foregoing results *will* be developed, but it is his belief that a tendency at least will be in that direction.

"How can it be done," may now be a question that is present.

The writer, during the past three years, had the pleasure of being associated with about twenty groups of superintendents and overseers in the Georgia cotton mills, and from his notes gathered here and there in various places and with different groups, he will, if sufficient interest is shown, develop each month an outline for one conference, not as final and unchanging, not as the exhibition of per-

fect skill, but only as a suggestion for some superintendent to get the idea and then develop a better conference than the suggested one.

These articles will be published in COTTON, serially, so that each monthly issue, beginning with December, will contain a suggested outline for a conference. If, at any time, assistance or additional suggestions are desired, a letter to the editor stating those desires will be brought to the writer's attention, the special conditions of the case discussed and recommendations given.

Southern Textile Association Holds Fall Meeting at Augusta

A well-balanced program, a good attendance, and a lavish entertainment, which included a never-to-be-forgotten barbecue, made the Fall meeting of the Southern Textile Association, held at The Hotel Richmond, Augusta, Ga., on October 12 and 13, a decided success.

This report is being written quite some time after that barbecue, but pleasant memories linger now, and undoubtedly will endure. It was a great thing; plenty to eat, with samples of Augusta's fairest doing the serving, and not a hitch in the whole works.

One important feature of the meeting was the extension of the Association's discussion facilities by the organization of a Finishing Division. This department will be for the purpose of discussing problems relating to the finishing processes, and completes the Association's discussion organization, which now includes every phase of mill work. This new division is to include those mills doing their own finishing as well as the finishing plants of the South, and others interested in the subject.

R. W. Arrington, superintendent, Union Bleachery, Greenville, S. C., was made chairman of the division, and it was stated that the first meeting will be held shortly, and letters sent out to all those having a direct interest in the division, urging their cooperation and attendance.

George A. Franklin, superintendent of The Sibley Mfg. Company, Augusta, Ga., and chairman of the local entertainment committee for the convention, was elected to the Board of Governors in a meeting of the officers on Friday evening, to fill the place made vacant by the elevation of Oscar D. Grimes to the chairmanship of the board.

The convention proper was opened at 10:16 o'clock Friday morning, October 12, by Mr. Franklin, of Augusta, the chairman of the local committee on entertainment— to whom hearty thanks were extended for the barbecue and other features of the entertainment. The Rev. Mr. Grace made the invocation, after which Judge Franklin, of the Superior Court, Augusta, welcomed the visitors to the city. The meeting was then turned over to President James A. Chapman, Jr., of Inman, S. C., who called on Secretary A. B. Carter for the response to the address of welcome.

Practical discussion and technical reports occupied the fore part of the session, the first paper being presented by J. Walter Hames, superintendent of the Exposition Cotton Mills, Atlanta, Ga. This was a brief report of the carding-spinning discussion meeting held in Atlanta by the Textile Operating Executives of Georgia. The report summarized the major points of interest that developed in the discussion, a complete practically verbatim report of which the reader can find in the April, 1923, number of COTTON.

After the presentation of Mr. Hames' report, Oscar D. Grimes, of Milstead, Ga., chairman of the board of governors of the Association, took the floor to conduct the discussion on carding and spinning. Because of limited time, this discussion was brief, but some interesting points were brought up.

In beginning the discussion, Mr. Grimes first took up the opening room, and described his own system of opening. "We open a day's mix at a time," he said, "which is 36 bales. We have a bale breaker through which it passes, and then it goes through two vertical openers. Then we have two ageing rooms into which it is blown, after which it goes through three hoppers to another vertical opener. We find that we get a better mixing by the use of the ageing room, and the green cotton we are using now isn't giving us any trouble. I have had to steam green cotton at the beginning of the season when first used but I haven't had to do that at all with this year's crop, and I attribute it all to the ageing room." He asked for an expression from J. H. Howarth, assistant superintendent, Lanett Cotton Mills, West Point, Ga., on his method of mixing and opening green cotton.

"I open just as much as I can," responded Mr. Howarth, "and let it lie as long as possible. We run about 140 bales a day, and I cannot open it all at once. First thing, I take off all the ties and let it spread out and open up as much as I can ahead of the pickers. In the warehouse I take off all the ties except the two end ones, and that stays in the warehouse two weeks that way, and gives it a pretty good spread. I open 25 bales at a time and feed them, as that is all that we have room for. We do not use any ageing bins, but I believe it is the only way to run cotton; you get it more nearly back to its natural condition; but where you are running 800 bales a week as I am it is hard to do all you want to."

Called upon for a statement, W. L. Phillips, superintendent, Social Circle (Ga.) Cotton Mills, said, "We have an opener room large enough to hold a week's supply. I run it through the Crighton opener and drop it into our picker room. We have two bins, and we can age enough on one side to run a day, and while we are using the cotton from that side, we are ageing some in the other side for the next day. Since using the new cotton, it is so much better that our breaking strength has gone up 8 to 12 pounds and we were able to take out two teeth of twist in the spinning."

Mr. Grimes put the question whether this year's cotton was better than last year's, or for the last five crops, and the consensus of opinion seemed to be that it is.

"It has been my experience," said T. A. Hightower, superintendent, Addison Mills, Edgefield, S. C., in connection with this discussion, "that it is a mistake to run new cotton exclusively. I have found it best to have some old cotton on hand, and mix it about 50-50. It will give

you less trouble than all-new-cotton will give you if you mix it, say, half and half, or with a fourth or third of old cotton."

It was pointed out that the superintendent buying his own cotton was fortunate in being able to do this, but the majority run cotton bought by another man, who desires all the old stock run out before the new crop is started.

"I have trouble with my vertical opener curling the cotton," said Mr. Grimes. "I run 10,000 pounds a day through the vertical opener, with cage section, and the beater runs 690 r. p. m., and I can't stop the curl. I wish somebody would tell me how to do it."

There were no answers to this question, and the next subject taken up was the elimination of the intermediate picker. Mr. Grimes said that he had not been able to do this with equal results to those secured with three machines, and requested a statement from W. R. Thomason, superintendent, Palmetto (Ga.) Cotton Mills. "We have done it," replied Mr. Thomason, "with about as even a lap as we got before." "Is it as even yard by yard?" asked Mr. Grimes. "Just about," said Mr. Thomason. "We keep the breakers full all the time and do not shut them off. Our laps vary some, of course, but they always do when you get it down to a real yard-by-yard test."

"Well, how much do they vary yard for yard?" queried Mr. Grimes. "I have as high as one ounce on a 16-ounce lap," said Mr. Thomason, "running about a half an ounce over and a half an ounce under standard. That is as good as I have been able to get. I have two finishers of one make and a breaker of another, but I have not been able to get a perfect lap so far, either with intermediates or without them. Of course the more doublings we get does help the evenness. But even in our card room I have never been able to cut out drawing and get as even a number."

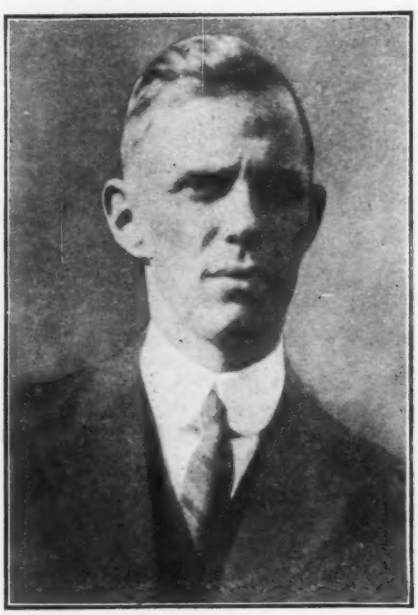
Continuing, Mr. Thomason said that "I have had a great deal of trouble with the logger heads. I found that I had long and short laps on the pickers. I got to trying to make the yardage run even, and I had to go down to the brake shoe and logger head and fix it. There are a whole lot of fellows who worry about a lap varying a half a pound in weight, when they may be having two or three yards variation in the length of their lap. What started me was discussion I read in COTTON that took place at a meeting in Anniston. I could hardly see how it could be, but finally I found out that my logger heads were doing a whole lot of it. My laps varied three yards, making a 16-ounce lap, though the laps might weigh out the same. That was the biggest thing—the length of the laps, instead of trying to work the eveners to make an even lap I tried to make the yardage uniform also. I make a 40-yard lap.

"A great many of us do not give the pickers close enough attention. On the yard basis, and using a real pair of scales that will weigh them correctly, you will find lots of things that you didn't know before."

The next question was the use of humidifiers in the picker room. W. H. Gibson, Jr., superintendent, Union-Buffalo Mills Co., Union, S. C., said he uses them in the picker room and also in the opener room, and in the card room, and in the cloth room. "We wouldn't attempt to run the mill without having them in the picker room," he said. "We get a firmer lap." He replied to questions, stating that he runs about 50 per cent relative humidity in the picker room. Mr. Franklin, of the Sibley mill, stated that he was in favor of using humidifiers in the picker room, but that he does not do it at the present time because of changing the mill around. "However," he added, "we have not thrown them out, and I expect to put them back." He said he secures a firmer lap by doing this.

"I use humidifiers in the picker room," said Mr. Grimes, "but our picker room is entirely cut off from the rest of the mill, and it takes a great number of humidifiers for it; therefore we cannot keep the humidity uniform, because we do not have enough heads. I like humidifiers in the picker room and also in the cloth room, because we get a uniform percentage of regain all the way through."

"We have had the picker rooms equipped with humidifiers in two mills where I have worked," stated F. Gordon Cobb, general manager, Lancaster Cotton Mills, Lancaster, S. C. "We have found that when the cotton is real dry and if it hasn't got what we call 'pin trash' in it, that we can run the humidifiers and get good results, but when

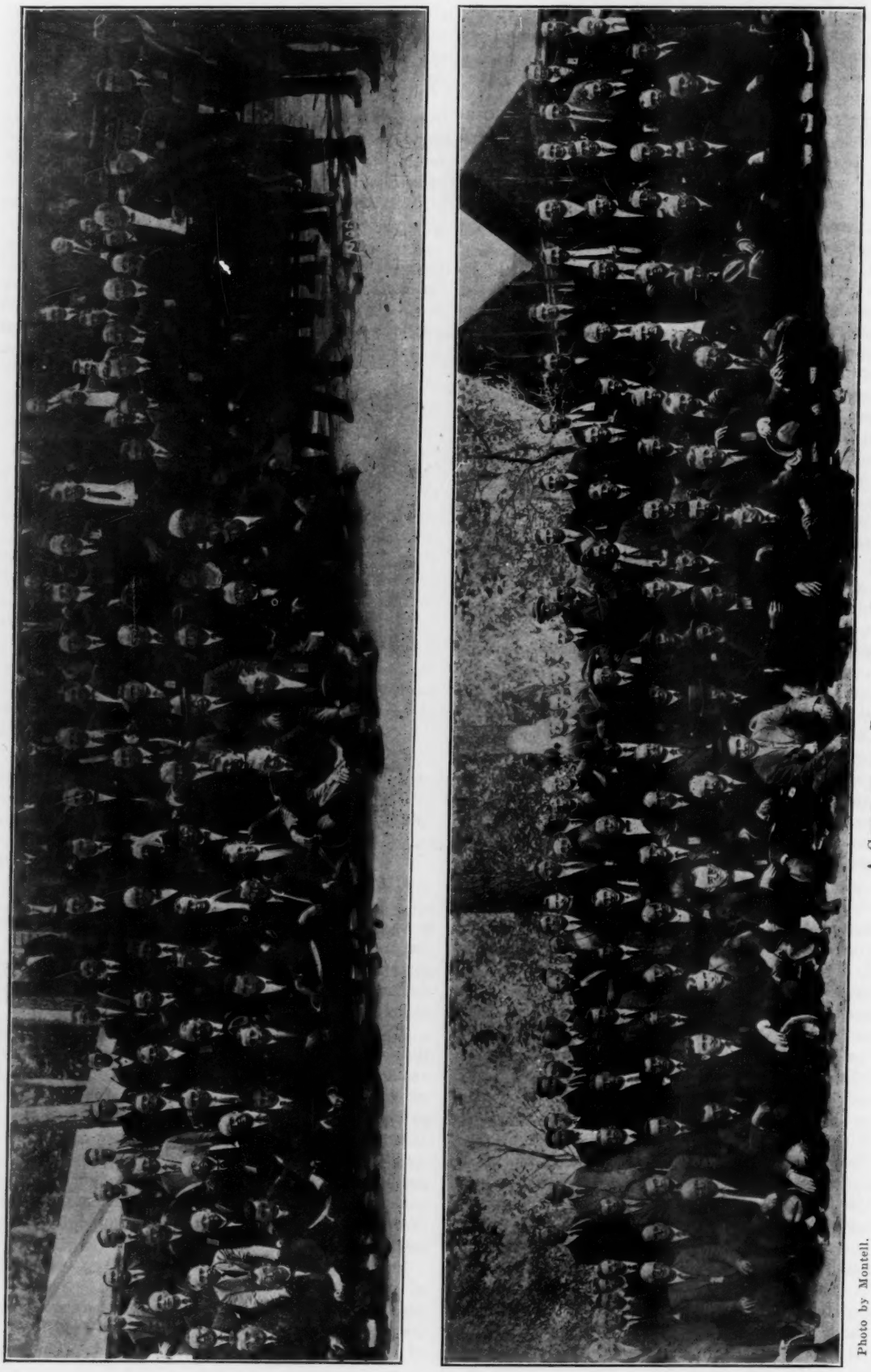


PRESIDENT JAMES A. CHAPMAN, JR.

you get cotton that is real trashy, that has a lot of this fine trash in it, that it is very much harder to card this pin trash out of the cotton, and it is very hard to get the cloth to look good, with the humidifiers going in the picker room.

"We have an opening room that is a little bit out of the ordinary," continued Mr. Cobb, "inasmuch as we built another opening room besides the one put in originally by the mill, and we open cotton in one room about, say, enough today for tomorrow's run. We use about 100 bales a day. When we have trashy cotton and we are making goods for people who are particular about the trash, we stop the humidifiers in the picker room." Ira B. Grimes, superintendent, Elm City Cotton Mills, LaGrange, asked Mr. Cobb what he did when it rained, and he replied that they cut them off.

Mr. Hightower, of Edgefield, brought up the question of the effect of humidity in cleaning the cotton. "You get cotton from the bins that has a lot of trash in it; doesn't the humid conditions have an effect on the amount of cleaning that you are able to give that?" he asked.



A GROUP OF THE DELEGATES AT CARMICHAEL'S CLUB.

Photo by Montell.

"You have spoken of relative humidity, and a firmer lap, and all that, but you have not brought out the most important point in picking, and that is cleaning the cotton."

Mr. Gibson said the theory which he applies in using humidifiers is just the opposite to that expounded by Mr. Hightower; that is, he explained, that theory is that the moisture causes the foreign matter to become heavier and more readily drop from the cotton in the picking process.

In concluding the carding discussion, Mr. Grimes mentioned recent experiments that have been made with four-roll drafting, and suggested this as a possible interesting subject to be taken up at a later meeting.

The next feature of the session was the presentation of a report prepared by George W. Hamilton, superintendent of the Crown Cotton Mills, Dalton, Ga., on the recent slashing-weaving-twisting discussion meeting held in Atlanta by the Textile Operating Executives of Georgia. This report, which in Mr. Hamilton's absence was read by Mr. Franklin, of Augusta, summarized the discussion at the Atlanta meeting, which will be found reported complete in the October number of COTTON.

Following this report, W. H. Gibson, Jr., of Union, S. C., chairman of the Southern Textile Association's weaving division, made a report which embraced the discussion at the meeting of his division in Shelby, N. C., on August 24th, and also covering somewhat the discussions of previous meetings, two of which were held in Greenville and one in Anderson, S. C. Because of limited space, Mr. Gibson's report is not included with this story, but COTTON'S report of the Shelby meeting, covering all the discussion there, will be found in the October number.

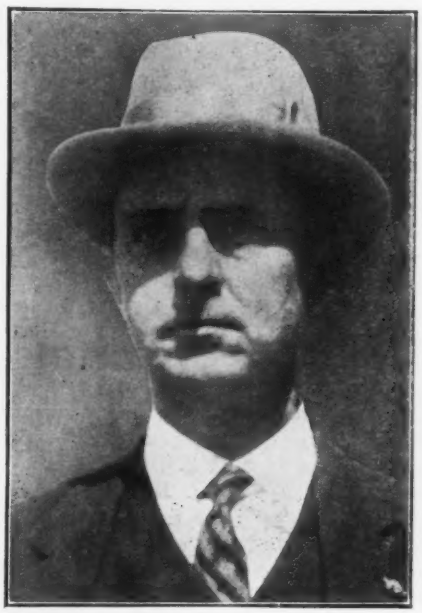
In the period of time allotted after the presentation of these reports for discussion on slashing and weaving subjects, conducted by Chairman Gibson, Mr. Howarth, of Lanett, asked "What is the meaning of medium fluidity?" referring to a statement made in the chairman's report. Mr. Gibson replied that he should call 30 fluidity starch of medium fluidity; 40 fluidity as thin boiling starch, and 20 fluidity as more or less thick.

Mr. Hightower, of Edgefield, precipitated a rather lively discussion by asking how many mills represented have their starch analyzed by chemists. He stated that he does, and using a 93 per cent fluidity, he finds he gets about five per cent impurities.

"As I understand it," said Mr. Howarth, of Lanett, "it is a matter of the starch manufacturers using different instruments. I find that if you get what is supposed to be the same fluidity of starch from several concerns, the starches will be different. I once took two starches and sent them to two different starch concerns, and their analyses came back altogether different. I was supposed to have 20 fluidity starch, and one report came back showing it to be 28 and another 14. Also, one time I sent two samples of identically the same starch, in two different packages, to a chemist and the analysis of each came back different. We have a number of starch men here—I have four or five in my office every week—and maybe they can tell us something about it. I have made lots of tests on this, but I have yet to find how to get a uniform fluidity in starch. It may be possible, but I do not think so. However, I have come to the conclusion that I will do more analyzing than I have done in the past. Now, I never bought a car of compound that I did not have analyzed to find out whether it is running uniform or not, but I have not done that on starch as much as I want to.

"I am a great believer in thick boiling starch," Mr. Howarth continued. "I am one of the last mills in the South to go onto thin boiling starch, and I am yet to be shown that I get any better results. But I am using 20 pounds more starch to the mix. We are now putting on about 9 or 10 per cent, and I believe I can put that on with a thick boiling starch, and I can save the mill money by buying thick boiling starch." Mr. Howarth indicated that he and the Trion (Ga.) Company were about the last southern mills he knows of to use thick boiling starch, and at the present time Trion is alone. He said Lanett's average number is around 14½s.

H. O. Davidson, superintendent, Eagle & Phenix Mills, Columbus, Ga., was called upon for a statement, and said



VICE-PRESIDENT MARSHALL DILLING.

that while he has never made any tests for impurities, "there is a standard that you can use to get the fluidity. I have the formula at home in my desk, and we have tried it out. It does pretty well, but you have to make it under certain temperatures and certain other conditions, but if you have a laboratory at the mill, I think you can test it yourself."

Mr. Howarth explained that what he was trying to arrive at was whether the starch chemist was giving it the proper test. Mr. Alexander, representative of a starch manufacturer, was called upon, and said that "we have found that thin boiling starch is better because it forms a thinner face and puts a greater percentage of the starch into the yarn, making a stronger yarn and adding more weight, though it is true you have to add more in the size box." Mr. Gibson asked if Mr. Alexander could explain the method of testing to determine the fluidity.

"Each manufacturer has an arbitrary system," was the reply, "so that one starch put out by one concern and analyzed by another, might show up a different fluidity."

Mr. Howarth stated that one concern told him they

keep their testing instruments locked up in the safety deposit box. "They have a funnel, and mix up the starch, and it drops through this orifice; that is the way they do it. Another concern may have the same kind of instrument but it is made a little differently. It is arbitrary. They have their own instrument, and in one's it might drop 50 drops while the other fellow's is dropping 40."

Mr. Davidson explained that this is measured by the rapidity with which water drops through the same orifice at a certain temperature. That is, if the orifice drops 100 drops of water, and will drop 20 drops of starch in the same time, the starch is called 20 fluidity, and so on.

"Well, it looks to me like some of these starch men ought to be able to tell us how they arrive at the fluidity of starch," declared Mr. Franklin. "If you buy a three-yard twill from one mill, and another three-yard twill from another, with the same number of picks, you get mighty near the same cloth. It's a devil of a thing if I am buying 40 fluidity starch from one man and another fellow sells me 40 fluidity and it turns out to be something entirely different; I had the idea that I was getting the same thing. There are a lot of starch men here and I don't see why they can't tell us about it."

T. J. Digby, superintendent, Oakland Cotton Mills, Newberry, S. C., recommended as the remedy that "you get a starch that is giving you satisfaction, and then stick to it!"

"The matter of thick and thin boiling starch is largely dependent on the length of time and the temperature at which you run it, and whether you put in other ingredients that change the nature of the starch. What has been said here about testing starch is absolutely correct. One chemist analyzes with one species of equipment and another in another way. They ought to analyze it in the same way." This statement was from C. S. Doggett, director, textile department, Clemson College. He said that really the final test for the starch was made by the man at the slasher.

W. O. Tallent, superintendent, Adams Cotton Mills, Macon, Ga., said that he once sent two packages of the same starch to a chemist at different times, and got different reports. He said it was something like a difference of four per cent; he was supposed to have 40 fluidity, and one report was 37 and the other 41½.

At this point a member brought up that "there should also be some tests taken on standards of oil. One company will give you one grade and another another, under the same designation. One man's light oil might have the same viscosity as another man's heavy oil."

Mr. Tallent asked the final question in the weaving discussion: "From the reading of your report I understand that it was the opinion of the majority of the men at your meeting that you hold the temperature in the size box from 190 to 200 degrees. If you wanted to add weight, would you increase that or reduce it?"

"Personally, I would not do either," said the chairman.

"I recently made some tests on that," said Mr. Tallent. "I was using some very low grade cotton, and we were having considerable trouble. I had two or three slasher men there, and also had two or three different kinds of sizing compounds demonstrated. The most of the slasher men agreed that the temperature should be held around 190, or below 200, degrees. But we increased our temperature up as high as 208, about as hot as it would go without jumping out, and I have been holding it around 204 and 206, and I get an increased strength on this low grade stock, and it weaves fifty per cent better, and we increased our production considerably." This was making flat duck, he said.

Following this weaving discussion, Mr. Chapman presented Richard W. Arrington, superintendent of the Union Bleachery, Greenville, S. C., who read the following paper on

"Mutual Problems of the Mill and Finisher."

"President Chapman has asked me to read before this association a paper on 'Finishing,' and this I could very easily do. I could talk almost indefinitely on subjects like singeing, kier boiling, washing, bleaching, starching, finishing and other details in the operation of a bleaching and finishing plant but realizing that these details would probably by very tiresome to most of those present, and feeling at the same time that any bleacher has information that should be helpful, and, I trust, at the same time interesting, especially so to overseers and superintendents, I have asked him to let me change that subject to read 'Mutual Problems of Mill and Finisher.'

"I'm sure the average mill man will immediately think, 'What mutual problems have a mill and a finisher?' As strange as it may seem, there are a great many. There should always be a desire on the part of any manufacturer to hear things that will enable him to improve his product. If I understand the purposes of this Association correctly, that is the very reason for its existence. It is an agency whereby mill men can come together for the purpose of exchanging ideas about practical mill problems that will be beneficial to all. It is undoubtedly a wonderful step forward toward making the South what she rightfully deserves to be—*the* textile manufacturing center of the country. This Association and one or two others have been largely instrumental in breaking down the old barrier of secretiveness, and in eliminating the old feeling that used to exist, which, if expressed in words, would be something like this: 'It cost me a lot of time and money to find that out. If he wants to know, let him find out the best way he can.' There probably never was a business much worse along these lines in the old days than the finishing business, but I thank goodness it is just about a thing of the past. A man who still holds these views I consider an 1880 model instead of a model of 1923, the day in which we are now living. He loses sight of the fact that the other fellow has probably had experiences along some lines that will be of more help to him than the information he will be furnishing. So by swapping those ideas in a place like this both parties are helped by the transaction.

"In the same way suggestions should be helpful and criticisms gladly received because none of us is perfect and if by receiving suggestions and criticisms we can improve the quality of our product we are the gainers by having received them.

"We in the finishing business receive them by the score, probably a great many more than the average cotton mill, but we are always glad to receive them and try to profit by them. I don't mean to say that we delight in receiving terrible howls about this, that, or the other thing, because we think, like everybody, that some of the kicks we receive are unwarranted but I can truthfully say that when we are at fault we are glad to admit the fact and are glad of the op-

portunity to correct the fault, because if one man has cause to complain about a certain thing the chances are there are others in the same boat. The others might not take the trouble to tell us about it, but just quit doing business with us and we would never know the reason why.

"And so, gentlemen, I have said what I have because I feel there are things a finisher sees that a mill man would like to know about. He sees certain troubles and defects in an entirely different light from the mill man—some of them being very funny and some just the opposite. So I trust you will bear with me while I recite some of them to you and I sincerely hope you will understand that I am in no way criticizing any particular mill but am offering them purely because I think they will be of interest to you.

"One of the funniest things I ever saw come out of a bale of cloth was a small rat which was completely woven into the cloth. The warp threads extended entirely across the rat's body with none of them broken, and aside from pushing some of the threads out of place, there was nothing else done. I don't know, of course, how it happened unless the rat ran across the loom while it was running but I do know we received it in a bale of cloth. We naturally cut it out and were going to have it framed and expected to label it 'The Original Ratine.' I put it in a drawer in my desk and upon going back about two weeks later to get it I found the gentleman had disappeared except for a few remnants—evidently eaten by other rats.

"On two or three occasions we have found broken Coca-Cola bottles between the cuts. I can see now a man about to be caught in the act by the overseer or superintendent slip the empty bottle between the cuts before baling.

"It is not uncommon to find in bales of cloth notes written sometimes by men but usually by members of the fair sex giving their names and addresses and inviting correspondence.

"And now to get to the more serious side. From the looks of some of the goods we receive which are classed as firsts a person would get the impression that the cloth room inspectors must think that any possible imperfection, including misweaves, will bleach out. It looks as if some of them must feel, 'Well, that's going to a bleachery—it will come out.' But, my friends, it doesn't always come out and when it doesn't and when we can definitely determine the fact that it is a mill defect, we are forced to invoice the finished goods to our customer as 'mill seconds.' Sometimes you may get a comeback on them and at others not. Of course when we can catch anything in the grey, if the yardage involved is not too large, we simply deduct the yardage held out, notify our customer that we are holding it out, and send him a sample showing the defect. If the trouble is pretty well distributed throughout the lot we hold up the processing of the entire lot. You can readily see, though, that in processing approximately 400,000 yards daily and running it on a number of machines at the rate of about 200 yards per minute on each machine, we cannot possibly catch all the defects.

"One of the greatest troubles we have is with oil. There is hardly a day that we don't have two or three lots from which oily goods are held out. Some mills use an oil remover which after applying it to the oily spots and allowing it to dry into the cloth is supposed to remove the spots in bleaching. Sometimes it does and sometimes it doesn't, and I'm sorry I cannot tell you exactly which kind will remove oil and which kind will not. The surest way I know is to treat a piece, then send it to some finishing plant and find out.

"It is not uncommon to find on cuts of cloth very conclusive evidence that at most mills there are large quantities of Brown Mule or some other equally well known brand of chewing tobacco sold. I'm glad to say, though, that is one trouble that is eliminated in the bleaching.

"Another thing that possibly some of you have wondered about is branding and cut marks. Cut marks, unless some kind of special ink is used, will always bleach out as well as any ordinary branding. We get sometimes goods which have evidently been branded for export or for domestic sale in the grey. This branding does not worry us because it always bleaches out, but I will tell you something

OSCAR D. GRIMES, CHAIRMAN OF THE BOARD OF GOVERNORS.

that does not and that is colored strings of different kinds that are sewed in the selvage to show some kind of imperfection. The coloring matter in these strings will bleed out and mark off on other pieces causing this discoloration not on the one piece alone into which it is sewed, but probably to others as well. May I suggest that if strings are necessary you do not use colored strings.

"Did it ever occur to you that a little thing like a ring traveler could cause a big damage in a finishing plant? I have known of two cases at our plant where a ring traveler had in some way gotten into the grey goods, had gone entirely through the bleaching processes and when the goods were ready for finishing the ring traveler became imbedded in a water mangle roll and cut a hole in the cloth every time that roll turned over until it was caught. Usually, on things like that, a good many thousand yards are run before the damage is caught. The question then arises, who is to blame? The mill sent the goods to the finisher with the ring traveler in them. If they had not the damage would not have occurred. Is it not fair then that the mill should stand the loss? One reason I bring this up is because I know right now of a case exactly like this. The finisher

—and, by the way, let me say it is not our plant—takes the stand that they are not responsible. I haven't heard what stand the mill is taking, but whatever the outcome, it only goes to show what a lot of damage can be done by some of the little things that we possibly seldom think about.

"There are two things that are rather similar and things that a finisher runs into pretty often, that is grey mill seams where two or more pieces are sewed together, and spliced pieces where two or more small pieces are folded together to make one large piece. On the spliced pieces it means that when this splice comes up while the goods are being run that the loose end will go through the machine before it can be stopped, which means that the operator must then re-thread his machine, which takes about ten minutes, and sew the two ends together on a hand sewing machine. You can readily see, therefore, that many of these will cause not only a lot of damning of the mill by the machine operator, but more important than that a serious loss in production. The mill seams cause the same trouble except that it is on a different machine and a great deal worse because there is usually so much more of it. You doubtless know that the average mill seam will not stand the bleaching process. It will be all right until after the boil when it then begins to pull in two. That means, therefore, exactly the same trouble mentioned in connection with the spliced pieces, except a great deal more of it.

"There is one trouble that I never especially noticed until about a year ago, but during the last six months it has been getting gradually worse until now it has gotten to be a real problem. That is the matter of stitching the burlap to the goods in the bales. We have had the matter up with several mills but it doesn't seem to greatly improve. It is due purely to carelessness on the part of the men who do the packing, and it does seem as if it could so easily be overcome. Now, what are the bad effects of it? To begin with, if there are no others, it leaves a number of pieces of finished goods with holes in them near the selvage which may or may not be bad enough to class as a mill second. Then it is quite possible that at these places where the holes occur the cloth will tear in two, leaving a good many short pieces for which the finisher gets unfairly blamed.

"Of course to those mills who have had occasion to make goods containing artificial silk the question of tight silk is an old story, but for the benefit of those who may later go into it let me drop a word of caution to be very careful about the difference in tension on your silk and cotton. The silk, as you probably know, does not stretch, while the cotton does, and, too, the silk when wet has practically no strength at all, so unless the silk is properly woven it means all kinds of trouble when the finisher gets it.

"I wonder if any mills represented here still use old cotton ties for baling their cloth. If there are, my advice would be to give them up, because if you do not you will some day have a claim that will more than offset what little is saved in this way. I have seen bales put up with cotton ties which had evidently been exposed to dampness either at the mill or in transit where the ties had rusted through the burlap and rust stains showed all up the side of the bale and on almost every fold of cloth.

"I believe probably the greatest trouble we have is with misweaves or thin places, that is, when they appear in first quality goods. I say first quality goods because it is when we are not looking for them that they give the greatest trouble. If the goods are invoiced to us as seconds we do not dare put them over a singer, but when invoiced to us as firsts and then found, in running, to contain misweaves, they cause no end of trouble, and here is the reason: The entire lot will be opened up, laid out and ends sewed ready to be put over the singer. We then start singeing when up comes a place with the filling threads missing. What happens? The cloth burns in two, causing all yardage in the singer at that time, usually about 10 or 15 yards, to burn up. These goods that burn up are a dead loss to us, of course, and besides it is then necessary to stop the machine, cut off the gas, and thread up again, which requires quite a little time. After running a little while the same thing may happen again with the same loss. After that happens several times there is nothing for us to do but stop processing the lot and report the facts to our customer. This, though, we hate to do because it means holding whatever yardage is left in our grey room while the matter is being threshed out. I know, of course, that it is not possible to entirely eliminate this trouble; all mills have misweaves and probably always will have, but what I would like to see done is to entirely eliminate the packing of them in first quality goods.

"Another thing that causes us quite a good deal of expense is an excessive quantity of hanging threads on the selvage. In opening up some bales the selvages look like the beard of an old man who hasn't shaved for six months. These threads don't give us any trouble until they reach the tenter frame at which place they get between the clips on the machine, drag along the oily rail and then when they go over a calender the oily spot will mark off on the goods every time the roll turns over until the oil wears off. That means that each one of these oil spots must be hand-washed and then the whole piece entirely re-finished. We have hundreds of pieces in a year's time which require re-handling for this trouble.

"Now, gentlemen, I have recited to you some of the troubles we have. You have troubles, too, and a great many of them. As stated, they cannot all be eliminated but I do believe they can be minimized and I trust you will agree with me when I say that one of the best ways to eliminate them is by a spirit of cooperation between the mills and the bleacheries.

"Jim Chapman has an idea, and I fully agree with him, that by the organization of a Finishing Section of this Association that the southern finishers can meet and discuss common problems of their own the same as the spinning section and the weaving section and at the same time will furnish an excellent means for furthering the spirit of cooperation between the mill and finisher to the mutual advantage of both. That section will be organized tonight, and being the baby section both in age and size, will, like all infants, need a lot of help. You gentlemen can each assist in this, not only by cooperating with us as to your own particular mill, which I am sure you will do, but by helping us to interest in the section any other southern finisher or any southern mill doing their own finishing. I would like especially to call your attention to this latter statement, namely, that the section wants a representative not only from each southern finishing plant doing outside work, but from any cotton mill doing finishing, in fact, everybody interested in finishing in the South."

After Mr. Arrington's remarks, a treatise on cost ac-

counting as applicable to cotton mills, was presented by J. Irwin Howard, of Scott, Charnley & Company, Charlotte, N. C. He was followed by Chessley B. Howard, general sales manager of the Georgia Cotton Growers' Association, Atlanta, Ga., who spoke briefly on the aims and purposes of the cooperative cotton marketing plan.

Mr. Howard's talk concluded the morning session, after which the delegates were conveyed by automobile to Carmichael's Club, about six and a half miles from Augusta, where the aforementioned barbecue was served. This 'cue was staged through the courtesy of the Enterprise Manufacturing Company, the Sibley Manufacturing Company, the Augusta Factory, and the Graniteville Mfg. Company, the four mills in which Jacob Phinizy is interested, and the local entertainment committee, consisting of George A. Franklin, George H. Leitner, A. P. Hurt and S. Wiseman, had plans for the affair which went through in great shape, and it was unanimously considered one of the best entertainments ever enjoyed at an Association convention.

In the afternoon the delegates went sightseeing around Augusta and a number enjoyed the golf courses of the country clubs, privileges of which were extended to the visitors.

The Saturday Morning Session.

included two most interesting addresses. The meeting was opened by President Chapman, who read telegrams from absent members, and after allowing time for new inventions to be presented, the first speaker, Miss Katharine Dozier, educational director of the Pacolet Mfg. Company, was introduced. Miss Dozier's subject was

Education in Our Mill Villages

and she spoke in part as follows:

"All of our great industries are recognizing and emphasizing the value of education for service. Training for service in the textile industry demands our closest attention, our most intelligent consideration.

"Seeing the obvious is a faculty most practical minded business men possess, and an occasional woman may be found with a similar childlike capacity.

"Therefore, in our discussion we will devote our time and attention to seeing the obvious.

"A cotton mill is in the foreground of our picture, but we who are on our jobs, see straight through the walls and along the alleys and behold, not the cards, nor speeders, nor slubbers, nor spinning frames, nor looms, but the man on the job. Are machines idle? Where is the man on the job? Is the man, who operates the machine, loafing on his job, or is the machine stopped because the man, who should keep it in good running order, hasn't 'Got caught up' with his job?

"If the 'super' finds all of these idle machines he'll be looking, not *at* machines but *for* and *through* the man on the job.

"The obvious fact presents itself to our childlike vision. The man on the job is the vital factor in our textile industry. Money will buy the most modern machinery, provide the best material equipment, furnish raw material for manufacture, fill the pay envelope; but machinery equipment, raw material, pay envelopes, while important factors in the product of industry, are reduced to zero if the human factor, the man on the job, is a zero factor.

"These obvious facts present our obvious need, better trained help. The obvious question, 'How Will we get it?' is answered by the equally obvious reply, 'Train it.'

"As a result big business is concerning itself directly and vitally in the education of its employees. The New York Stock Exchange Institute has just sent out 'An Announcement of the Courses in Business Economics for Employees—Season of 1923-1924.' A well planned course in 'Business Economics for Employees' sounds interesting.

"Let's make one for our cotton mill employees right now. Since all problems are solved by taking known quantities with certain fixed relationships, and proceeding with mathematical precision until the unknown quantity is found, so let us proceed to solve our problem, and find our highest common factor in the products of industry, the well trained man on the job.

"The known quantities in our problem of human help are the home, the school, the church, the mill. The unknown quantity is the citizen-to-be in home, school, church and mill. A certain relationship between home, school, church and mill will fix the value of this unknown quantity, the citizen-to-be.

"Since we know how 'hard it is to teach an old dog new tricks,' we will begin at the cradle with our course in business economics rather than at the grave, and consider the same from the cradle to the grave for our citizen-to-be. The home of the citizen-to-be, his native habitat, is our first known quantity. Its two essentials are shelter and the home-maker within the shelter.

"Is the house, which affords the shelter, good, clean, attractive, sanitary? Is the home-maker within the shelter capable, thrifty, skilled in domestic arts and, an intelligent spender?

"If 'Yes' is the answer to these questions, somebody has been educated in these essentials, and that 'somebody' is twins, the employer and the employee. Therefore, home making is the first subject of our course in 'business economics' for employees and employers.

"Our Pacolet schools specialize in cooking, sewing, and industrial arts because we know that a clean, comfortable home where well cooked meals are served sends from its shelter a well nourished contented citizen, 'a workman who needeth not be ashamed.'

"Our mill executives see to it that our shelter is good, clean, attractive and sanitary, and provide equipment for educating our home-makers, so that they may be capable, thrifty, skilled in domestic arts and intelligent spenders. Our school operatives see to it that equipment and educational machines are kept in good running order, and the school 'super' never finds any machines standing idle.

"The output of home-makers from our domestic science and art departments gives us a large percentage of 'firsts,' some 'seconds,' and shows a minimum of waste.

"The school has been introduced by the home economics department as the second known quantity in our human help problem. Since health is the essential of all development, mental, moral, physical and spiritual, the first concern of the school program is obviously health. Our home economics department, which trains home-makers in preparing and serving wholesome food, and in conserving supplies, is supplemented by our public health nurses and by our physical directors cooperating in health programs.

"To illustrate, the relationship of our known quantities, home, church, school and mill, in solving our community problems, and in finding our unknown quantity, the citizen-to-be, allow me to present as a concrete example the following health project:

"Two years ago New Holland mill village had 150 malnourished children. The school nurse, the domestic science teacher, and the grade teacher secured the interest and cooperation of the children and the mothers of these children.

"First, by teaching the children in daily classes the existing needs of the malnourished, the causes of malnutrition, and the remedy for the same.

"Second, by frequent visits to the homes of malnourished children and confidential talks with the mothers about their children.

"Third, by talks at parent-teacher association meetings given by nurse, doctor and health authorities.

"Fourth, by grouping malnourished children in small nutrition classes taught by the community nurse.

"Fifth, by the child keeping a diet card, and diary of nutrition taken at daily meals. The nurse checks same and suggests changes and substitutions in diet when necessary.

"Sixth, by domestic science teachers instructing the child in the preparation of the food suggested by the nurse.

"Seventh, by the company providing community pastures and cow stalls for every family in the village, and encouraging ownership of a family cow. (Coffee drinking is diminished, milk drinking is increased.)

"Eighth, by the pastor preaching sermons to children on the body as the temple of the soul, and praising the work being done for the health of the child.

"Result: Only fourteen of the 150 are still as much as five pounds under weight, and in the case of the fourteen, some physical defect retards the proper development of the child until the same is corrected. (Tonsils and bad teeth are principal defects. A number of tonsil cases has been provided for by the company when the case was urgent.).

"A marked improvement in family diet is noted as resulting from interest in a child's nutrition.

"Summary of Nutrition Projects—Agents in improving conditions, were child, teacher, mother, nurse, preacher, mill authorities, all working intelligently and harmoniously for the common good in hearty cooperation.

"In a similar fashion, home sanitation, home making, home improvement, respect for property, various principles of civic righteousness, and general community interests, are set forth by precept, example and practice.

"Playground committees keep school grounds clean, inspecting daily; housekeepers committees of girls inspect school rooms before assembly, morning, noon and at recesses, keeping their own grade rooms in good order. Any slight repair of school property that can be done by the pupils is their responsibility.

"One of the most interesting phases of our education program is in developing good neighbors. The children are encouraged to report cases of illness and shut-ins to grade teachers and to domestic science teachers.

"Children are rewarded for reporting such cases by being permitted to take flowers from the school gardens to their sick neighbors or to prepare for them invalid's trays in the school kitchen under the supervision of the domestic science teacher who is advised by the community nurse as to nature of the illness of the patient.

"Education in play is another important part of our program, for we realize that the man on the job is well taken care of while he is at work, and the man off the job needs wholesome, clean recreation during his leisure.

"Therefore, our program of formal gymnastics, rhythmic play, organized games (indoor and outdoor) for school children is extended after mill hours for our mill workers under competent physical directors.

"Equipped gymnasia, girls' club rooms, parlors, pool rooms, bowling alleys, swimming pools, indoor and outdoor basketball courts, athletic fields for baseball and track work and tennis courts furnish ample and adequate opportunity for anybody and everybody who wants to play. Thus idle and vicious amusement is barred by having busy and wholesome amusement in full swing.

"Moving picture shows, furnish clean good pictures and run special educational features in the afternoon on the request of school authorities to reward children for endeavor to excell in special lines.

"Attendance at the various Sunday schools is stimulated by weekly reports at general assembly in chapel exercises. These reports show which day-school grades had highest percentage at Sunday-school the previous Sunday.

"All day-school teachers, mill overseers, members of store and office forces and community nurses are active in Sunday -school and church work.

"Our part-time classes at Pacolet provide continuation work and vocational training for boys and girls fourteen years of age and over who work in the mill half the day and go to school half the day. These children are paired in half-day shifts. For example, an eight-frame spinner is paired with an eight-frame spinner. One of the two goes to school in the morning, the other to the mill. In the afternoon the schedule is reversed, and each child gets half day in school and half day in the mill.

"This work is under the supervision of a specially trained teacher who hopes to develop some good material for foremanship.

"Our evening vocational schools for adults and our evening classes for illiterates present an interesting feature of our educational work. The New Holland night school is in its sixth year, and increases in enrollment and average attendance annually. Sixty-five substantial promotions in the mill, and many improvements in method of operation and attitude toward job of those attending bear eloquent witness to the excellent work of the overseer who is in charge of the night school. From illiteracy to chief engineer is the most notable achievement of the New Holland night school, and the overseer, who is responsible for the success of this school, has given invaluable service to the men and boys he teaches and to the mill he serves so faithfully at all times.

"He holds no academic degree, but he is one of the finest teachers of civic righteousness and Christian citizenship I have the honor of being associated with in educational work.

"His teaching 'Earn what you get' with the humorous comment, 'Most folks get all they earn and then some,' is good pedagogy and sound philosophy.

"The foregoing illustrations of our program with educational objectives have been given to present our obvious demands and their equally obvious supply.

"Our educational program strives to enlist home, church, mill and school in every activity for the common good. And through the child in day-school and in Sunday-school respect for home, home making, home keeping, home sanitation, and home responsibility, taught by precept, ex-

ample and practice, sound principles of good citizenship are taken into the home.

"With the child as our principal agent in fixing the relationship of our known quantities—home, school, church and mill—we are confident that our unknown quantity, the citizen-to-be, the man-on-the-job of tomorrow, remembering the daily Bible study of his youth, will 'study to show himself approved unto God, a workman that needeth not to be ashamed.'"

The final feature of the meeting was an address by George S. Harris, president and manager, Exposition Cotton Mills, Atlanta, Ga., who spoke on

The Future Prospects and Possibilities of the Southern Textile Mill Superintendent and Overseer.

Mr. Harris' remarks follow:

"Your prospects and possibilities are whatever you choose to make them. Men in business work on averages as it is a physical impossibility to make every transaction a good one and a man will usually take a shot at a proposition that seems to average better than a 50-50 chance. Unquestionably, you have a chance away above any 50-50 chance that ever came to a group of men in industry. You have so many possibilities of getting on top of the world in your chosen field of work I am tempted to say to you frankly that anything short of this would be a failure on your part.

"Your future can easily be measured by your immediate past and by this measurement an easy calculation will show you your goal. I am a comparatively young man, but let's see what has happened since the day I went to work in the year 1898 in the little yarn mill at Cedartown, Georgia, on a job feeding hoppers. There were in the cotton states at that time something less than six and a half million spindles and these spindles consumed 1,400,000 bales of cotton. I was paid for feeding those hoppers the large amount of 35 cents a day, or $2.10 a week for 66 hours. The price of a semi-skilled workman was not more than 75 cents a day, and many of them were not worth that.

"Our help were brought into our mills from the mountains and farms and most of them came to the mills because they could not continue to exist at farming. They were about as green as it is possible to be—in fact, you all are familiar with my reference here. We attempted to spin cotton in mills—that often were poorly designed—through hot, dry summer weather, with very poor and often no artificial humidification, and with labor that could hardly distinguish between a slubber roving and a twenty's yarn, then considered a fine number. Our efforts were watched with interest in both England and New England and there were many who said it could never be done with full success.

"It was about this time that we saw a large number of overseers come from the North. An overseer with us who could handle spinning beyond 10's yarn of a very ordinary quality was a scarce article and some mills brought experienced men from the North. Some of these men stuck and have been successful but the large majority went back, in many cases after making complete failures with the labor available. I have heard these men make fun of our labor and our mills; but we kept plugging, getting better every year.

"Compare the foregoing conditions as I found them in 1898 with those of today: 989 mills in the cotton states—more than sixteen and a half million spindles with 316,000 looms—that consumed last year 4,488,000 bales of cotton, while all other American mills consumed only 2,500,000 bales (figures from Secretary Hester's report)—this you will carefully note through a year that presented some most difficult merchandising problems to your presidents. I say, fellows, when your production will stand the market tests of the past three years you can rightly say you have made progress that is sure to attract the attention of the cotton manufacturing industry of the world. It is some achievement and you have a right to feel proud of it! It is the result of hard work on your part through a slow process of training green labor to the nice tasks required in handling our staple from the bale to the finished cloth. An Englishman whom I knew in the old days used to enjoy telling me of the spinners in his mill in Oldham where their

GEORGE S. HARRIS, PRESIDENT OF THE EXPOSITION COTTON MILLS.

grandmothers were spinners. They were born spinners; but you haven't had spinners that were born spinners. There is one thing however that you should not forget—your labor is of the purest Anglo-Saxon lineage found anywhere and, while they have had to learn the work after generations in the mountains, they are the best in America and capable of far greater achievements than you are getting today.

"Now why is it not logical to expect just as much progress during the next 25 years as we have made during the past? Compare ourselves today with the condition referred to at the beginning of this paper, add that difference to our present status, and what have you? As I vizualize our southern mills in 1948 I see a sound industry free from the old-style poorly lighted and poorly ventilated buildings so common in sections built years ago. We will have modern mills directed by progressive men who have already shown their ability to keep abreast of the times with all improvements as developed and tested. Our labor—all English-speaking Americans—will have developed through the schools we now have or are building into a thoroughly effi-

cient group of textile operatives, the equal of which will not be found on the globe. Our product will include every known cotton fabric in demand to the finest textures.

"This is not a fancied picture but is exactly what we may reasonably expect if we continue to progress as we have in the past. We have to date only just built a firm foundation, from very raw material, on which we can now set to work to really construct our house.

"The question before you—the superintendents and overseers of our mills—is what part will *you* play in the building of this wonderful structure. You really have the most important work that is to be done. You are to *first* improve yourselves in every way possible, continually studying yourselves—individually and as a group—to find the weak points that may be strengthened. *Second,* you will bring out each year from the rank and file of workers new material to be developed into overseers and superintendents. And *third,* you will continue your good work of improving our labor.

"How is this to be accomplished?

"Take the first point, namely, *'improve yourselves.'* You are not satisfied with the results of your present work as is evidenced by your coming to this meeting. You are looking for better things, and so long as you continue the search you will surely find these improvements. These discussion meetings present excellent opportunities and I have watched with very keen interest your proceedings. Through these meetings you are polished and refined. I doubt that very many of you fully realize the value you derive from leaving your mills and departments to come here to learn what your neighbor is doing. We often get so absorbed in our own individual tasks we feel we haven't time to leave them to get out and rub shoulders with other men. It is then that moss begins to crop out on our backs and before we realize it we are in a rut and making mistakes in direct proportion to the energy we are putting into our work. The hours you put into these meetings are your most valuable hours. They may appear to some to be a pleasant vacation, and they should be a pleasure. You should inject into them as much good fellowship as is possible. Get just as close to each other as you can, and when you feel free to call your competitor 'Bill', then invite him over to criticize your work. You may be proud of the way your work is going, but there is a man somewhere in this group who knows a trick that will improve it. Find him, make friends with him, and get him to show you the trick. You probably have a trick or two you can give him in return and thereby you both have advanced a peg.

"My second suggestion was to *bring out each year new material.* This is a very important part of your duty to your industry. I could lay down a few rules in this connection, but the main point I would stress is that you realize that it is your duty to your industry to train other men. The man who is so selfish as to stand in the way of the development of other men has no place under the sun and should be promptly stepped on. Whenever a vacancy occurs, comb your own organiation because it is a reflection upon your management when you are forced to go outside of your own organization to fill a vacancy in any position from section-hand upward. Please get this idea clearly: If you haven't a man ready when the vacancy occurs, *you* are at fault.

"I like a plan which I call the 'three point plan of promotion,' under which every man is pushing forward some one man ahead and pulling one from below. Take for illustration a second hand who is standing firmly in his shoes who wants to get ahead and aspires to be an overseer. He hasn't a thought of weakening his overseer in order that he may have his job; to the contrary his whole idea is to make his work stand out as a credit to his overseer and make him so good that promotion will surely come to him. At the same time this second hand has previously selected one or more section men and has them in training for his work. Sooner or later the overseer will be called to a larger room or to a superintendency and several men are advanced. The effect of this is always good throughout the entire organization. It immediately puts everyone right up on his toes to be ready for the next promotion. It is not unusual for the promotion of one man to advance several others.

"It is not always an easy matter to follow this plan and it often requires some courage to advance a man when you do not feel exactly sure of him. You know very much more about the men in your mill or department—their faults and weaknesses as well as their virtues and strength—than you generally know of the men in other mills. This often leads you to think that a certain man in a distant mill is better than any man you may have. You probably have only had an opportunity to see his good side, yet you rush after him when you have a vacancy and disappoint some capable man who has been doing good work for you. I have seen this happen many times, and I have also seen the superintendent of the other mill take your man and develop him into a much better man that he was in his old position. Did you ever see that picture of the two jackasses straining their necks, each trying to reach the grass in the other one's pasture? 'Just Two Jackasses,' the title of the picture, is a good illustration of some men. It is very difficult to tell what is in a man before he has had a chance to try himself, but I believe you are much more apt to make a mistake in selecting a man from another mill than from your own mill. Give your men every chance and don't expect everything immediately. If the three-point plan of promotion is kept continually at work in your organization, somebody will always be trained for any vacancy that occurs.

"You have demonstrated that the cotton states is the one logical location for the future development of the world's spinning industry, and it is clearly your duty to have new men ready as fast as they are required to handle the added spindles. It is not a matter of necessary capital to build mills. Capital in ample quantities is always seeking profitable investment, and all you have to do is to continue to show conclusively that capital invested in southern mills will earn a fair return and mills will grow just as fast as we can operate them. New mills create opportunities for the men of today; but you are not entitled to these opportunities if you haven't previously trained men who can step into your positions and handle your work just as efficiently or better than you are handling it now. If you fail in this duty, men trained in other sections of the world will be imported and, as they seldom understand our people and our conditions, either failure will result or progress will be retarded.

"We have not had, up to the present, the necessary machinery for training young men for our mill positions and most of you who now hold responsible positions have passed up through a hard rough road that few are able to complete.

Our facilities for learning have been so poor that many of us have acquired a very narrow education. This, I assure you, is no reflection on anyone, as you are due the highest praise for accomplishing what you have accomplished under the poor system of education you have had available. We are now, however, entering into a new phase of our development and will be called upon to produce more and better results if our industry is to keep abreast of the natural progress of industry generally. Our successors, as mill executives, must have a broader education than we have had. Under the natural course of progress our help will be better trained mentally and will expect bigger things of us, and if we do not train our leaders to a higher plane of thought the natural result will be our help will leave us for other and more progressive industries.

"This improvement in average mentality of our labor, is coming surely and we must keep leaders for them just one lap ahead, with improvements in management that will not only take full advantage of this improved mentality but advance their plane of living just as fast as they are ready to accept it. A happy, contented man or woman on your frames or looms is to be desired more than anything else for which you are striving, but contentment is often directly proportionate to intelligence. As you developed your mental capacity you were not content to run slubbers, for instance, and owing to the poor opportunities afforded our rank and file you easily advanced away; but as each year goes by, the educational facilities offered our workers are being improved and they are going to do more thinking for themselves. This is as it should be; but if we do not meet the situation with highly trained overseers and second hands, these workers may become discontented in our cotton mills and move into other industrial plants. This would mean that we would lose the very object we are now seeking by building schools in our villages. In this connection I must commend to you the efforts of our good friend Dave Clark in starting a movement that aims to make it possible for at least a few of our mill boys to leave the mill to acquire a textile college training. This is a far-sighted step forward, and I hope the vision will be quickly caught in every mill section in our cotton states.

"I would suggest that present-day superintendents and overseers give the large group of textile-school graduates each year every chance to develop in the mill. Many of these young men are capable and have a good foundation, but I often see a pronounced aversion on the part of mill executives to giving them a chance. There is a decided preference for the plant-trained man—which is easily understood—and these 'textile men,' as they are called in the mill, are often side-tracked into work that does not lead to responsible executive positions. In performing your broad duty to your industry as a whole, you should encourage these young men to get down to brass tacks after graduation. They often need a little nursing, as many of them —while realizing that they must have a little 'practical work,' as they call it—think themselves competent to railroad through and often do not understand that they are in competition with other men from the day they enter the mill. A loving father of one of these boys asked me recently if I would not kindly look after his son who was timid and see that he was not run over by the men in the big mill as they fight for the good jobs. I very promptly told that father that this would be a most unkind act on my part as the boy must be run over now while he has no distance to fall in order that he may learn to keep ahead of the game in the future when a fall might be disastrous. I do know that some good material in textile school classes never gets into the mill on account of the lack of proper advice to the boy at the psychological moment after graduation. Many others, after serving a year or more in the mill, divert their training because the mill executive has no interest in the boy and lets him get away into some other line of work,

INTANGIBLES IN MANUFACTURING

A Series by

Frederick H. McDonald.

Invisible Losses in Raw Material.

With a given cost of production, and a given selling price, the cost of the raw material determines the profit.

One of the commonest ways of trying to save in this cost is by speculating on the future market—often this brings heavy losses.

Manufacturing and speculation are two different businesses—they do not mix with continuous profit any more than oil mixes with water—and stays mixed.

Yet, there is a business-like and sensible way of assuring that the raw material comes in at the minimum of cost.

It must be bought at the most satisfactory source of supply—any market is often used, with resulting heavy freight costs or other disagreeable concomitants.

It should be shipped by the most economical route and method—water routes, truck routes and alternate railroad lines will stand study.

The price paid at the source is sometimes higher than necessary because of careless or indifferent buying agents.

A certain quality or type may be used, when a better could be found—we depend too much on our own limited knowledge, and refuse to investigate!

Our incoming material is not always bought in the best shape for the cheapest manufacture. We sort and mix widely varying grades of cotton, when suitable inspection would insure uniformity of grade.

We unwind and rewind yarns. We buy cloth in sizes that necessitate heavy waste in cutting.

Often, we perform, ourselves, operations on a small scale that the man we buy from could complete on a larger and more economic scale—with less cost to us.

On the other hand, we can often finish operations ourselves much cheaper than we have to pay the other fellow for doing this work.

There is a lot of profit in being sure about the raw material!

thereby losing a potential mill executive that might have developed improvement in management or equipment that would be of enormous value to the entire industry.

"Now, my friends, I did not intend to fill you full of advice—which seems to dominate this paper—but the subject is interesting to me and I have tried to develop a few thoughts that might serve to improve your 'prospects and possibilities' which are surely just what you choose to make them.

"You have a very broad field. You are producing one of the primary necessities of man, while located in the center of your raw material in a progressive young country, and there is no reason to believe that the world will not always afford a market for your production. Your work is extremely interesting, there is life in it, and no reason exists for your not being happy if you handle yourselves correctly.

"This is not always true of your president. He is bumped about in market and financial conditions beyond his control and he may at times pass a little bad humor down the line. Stick to him but don't fight back. I have been all through the road from the hopper feeder up through second hand, overseer of carding, master-mechanic, and was a superintendent for eighteen years. When I was much younger I entertained a great hope of some day being a mill president in order that I might kick some superintendent. But the trouble is I was a superintendent so long I acquired a lot of sympathy for him and also for his overseers. I can surely say, however, that making cloth or yarn is a much easier task than making money. You are handling mechanics and materials which always give you a definite known reaction and in the case of your labor you can, after sufficient experience, predetermine reactions; but your president is handling a handful of unknown quantities all the time and is continually being slapped in the face by reactions that no man could possibly predetermine.

"I used to wonder why so many of these big men in industry are 'hard-boiled.' As I get nearer to them it is easily understood. To hard boil an egg you place it in boiling water just five minutes. These 'birds' are in hot water half of their time! They become hard-boiled in spite of their efforts to keep soft!"

At the conclusion of Mr. Harris' remarks, the report of the resolutions committee was read and adopted, after which President Chapman announced that a meeting of the Carding Division of the Association will be held in Charlotte early in December, at a definite date to be set later, and urged a good attendance. For his efforts in providing entertainment for the delegates to the convention Jacob Phinizy was unanimously voted an honorary membership in the Association. The meeting was then adjourned.

The Bristol Company, Waterbury, Connecticut, have just issued a new 32-page booklet known as Bulletin No. 317, describing and illustrating in a very complete manner the Bristol's recording and indicating tachometers. It is now ready for distribution.

Shepperson Publishing Company, 16 Exchange Place, New York City, announce that the book, "Cotton and the Cotton Market," which was reviewed on page 842 of August COTTON, may be secured from them at $3.50 per copy net.

Promises or Accomplishments.

BY RICH. NEWBECKER.

Once upon a time there was a foreman who was always going to "put something special across." His ideas were bright and sparkling. He was a man well known in his community, and well versed in the mill game. Anyone who listened to him could not help but become impressed with this foreman's determination to accomplish certain objectives. In fact, they believed he meant exactly what he said. And on top of that, he believed these things himself.

But in reality, this foreman was only charmed with his own creative genius for planning things, for he never actually got a thing more than well started before another and brighter idea or plan would present itself to his agile and resourceful brain, and he would drop the first idea like a hot potato and grab the new one and start off gaily with it.

One fine day this foreman was outlining to his employer what he was about to tackle next and intended to accomplish.

"I don't believe it," replied his superior, "for you belong to that class of foremen who never get things done. You start them, but it takes all your enthusiasm to whistle that the boat is casting off, and then you float away downstream and run ashore."

The foreman became very angry. His eyes snapped and determination rose to a high pitch in his breast. "I don't know of any of the other foremen in this plant who can be called 'world beaters' in this respect. And although you are my employer, I tell you I am going to see this thing through at all costs on my part."

Thereupon the foreman hied himself to a convenient spot of retirement and thought it over. He was an honest foreman, and after a period of reflection, he acknowledged that that cruel creature, the boss, was right. He did not sympathize with himself, but made up his mind that henceforth he would get things done.

And he did!

This is how he did it: First, he stopped sticking a finger in every pie that came along. He discovered that he could not bake every one, so he had better start only a few and finish them and do the job well.

Second, he was careful not to announce what he was going to accomplish, but to wait for that happy moment when he could say, with pride, "I have done it!"

Third, before he began a new undertaking, he would first think it out, and thoroughly plan his mode of action along the proper lines.

Fourth, having started a certain task he held himself firmly to the task of seeing the thing through before making plans for another one.

Fifth, this made him more careful in what he undertook, and it also gave him the pleasure that comes with a job or a task well done. And it gave him the courage to tackle bigger propositions from time to time.

It wasn't long before he earned the title of being the foreman in the plant who could be depended upon to accomplish things that the other foremen failed to achieve.

What caliber of foreman are you?

The fellow who allows many Safety lessons to pass has a great future behind him.

Towels and Toweling

BY T. WOODHOUSE AND A. BRAND.

Although the plain weave cannot be said to lend itself greatly to the production of ornate effects, unless two or more colored yarns are used, both in the warp and in the filling, very pretty results are sometimes obtained by a suitable combination of colored warp yarns to produce border stripes in an otherwise plain fabric, and by means analogous to those already described. Particularly is this the case with the so-called "chain-stripes" in which the colored threads and the order of reeding produce effects more or less like elaborately linked chains. Typical examples of this method of ornamentation are illustrated in Figs. 6, 7 and 8.

The sample of cloth reproduced photographically at A, Fig. 6, is a plain fabric of medium quality. Its chief

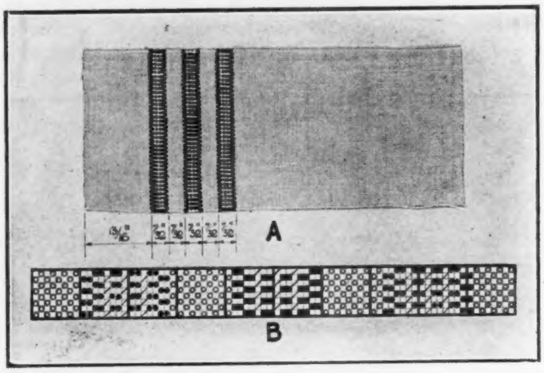


Fig. 6.

characteristic, apart from the chain stripe, is that the filling is 2-fold ramie. The warp is of 2-fold cotton, of lighter counts than the filling; there are 44 threads per inch in the body of the cloth, and about 40 picks per inch. The use of ramie as filling imparts a certain feeling of stiffness, as well as a slight luster beyond that obtained by the usual methods of finishing.

The colored yarns are of the usual counts of 2-fold cotton, while the stripe is crammed in the usual manner. There

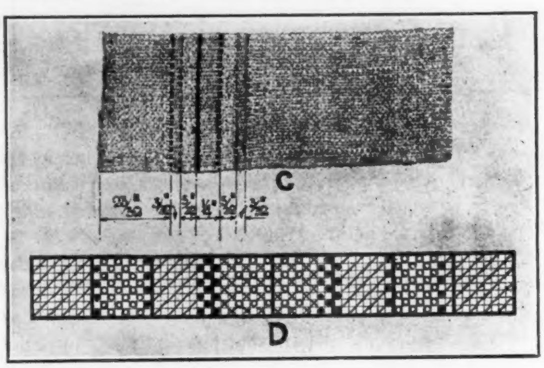


Fig. 7.

are from 68 to 69 threads per inch in the striped border, so that the degree of cramming is approximately 50 per cent above the order of reeding in the body, i. e., 3 to 2.

The point paper design for the striped border is given at B, Fig. 6; only the threads composing the stripe are shown together with 8 plain threads to the left of the stripe and the first seven plain threads of the central part of the cloth—altogether 80 threads appear on the point-paper design. Although 8 picks are shown, the weave is complete on 2 picks, the threads working plain throughout.

In the design B, the ground threads are indicated by open circles, the red threads by solid circles, the white threads by diagonals, and the blue threads by solid squares. The colored threads are used double, i. e., two threads are drawn through each mail eye of the harness, instead of a single thread as in the ground portions. The stripe may, therefore, be regarded as double-warp.

In a 24-inch fabric, the order of the warp threads from the left selvage to the middle of the warp would be as follows:

Grey	36								10								10								444	Middle
Red		4		2		2		4										4		2		2		4		of
White			1		1		1				1		1		1				1		1		1			Fabric
Blue										4		2		2		4										

Repeat the above in reverse direction for the other half.

A second typical example of a chain stripe is that illustrated in Fig. 7, where C is a reproduction of a small portion of the fabric, and D is the point-paper design for the stripe portion and for a few of the adjoining threads on each side. Possibly the chief and most attractive feature of this example is the unique effect produced by the use of pale shades of colored yarn. These pale-colored stripes are well defined by the outer threads in each stripe which are of brilliant scarlet, but the remainder of the stripe threads are pale blue and pale pink.

The warp and filling is of creamed flax tow, and are approximately equal in count. There are 40 threads per inch and 30 picks per inch. The stripe is of the usual 2-fold cotton, and the warping arrangement for a 24-inch fabric is as follows:

Pale Pink							2		1		1		1		1		2							Reverse and
Pale Blue			6					1		1		1		1		1					6			repeat for
Scarlet		1		1		3												3		1		1		the second
Grey	30				6														6				421	half.

In the point-paper design at D, Fig. 7, which shows 4 repeats in the way of the filling, the ground threads are indicated by diagonals, the scarlet threads by solid circles, the pale blue threads by open circles, and the pale pink threads by crosses.

The fabric shown at E in Fig. 8 is somewhat heavier in structure than the fabrics illustrated at A, Fig. 6, and C, Fig. 7, and the striped border is particularly well defined; it is closely crammed by 3-fold cotton yarns. This stripe shows up most effectively, and contracts boldly with the more or less matt surface of the body fabric.

The cloth is of flax tow, both in warp and filling; there are 36 threads per inch and 27 picks per inch, and the count of the filling is heavier than that of the warp. The stripe is $\frac{5}{8}$ inch wide over all, and its outermost thread is $\frac{11}{16}$ inch

from the selvage. The order of the warp in a 24-inch fabric is as follows:

Grey	28							385	}	Reverse and repeat for
Blue		3					3		}	the second half.
White			12	2	2	12			}	
Red				4	12	4			}	

The point-paper design at F, Fig. 8, is of 4 repeats in the way of the filling; the following marks are used to represent the various colors of the warp: grey (or ground threads) by crosses; blue threads by solid squares; white threads by diagonals, and red threads by solid circles.

Although it is quite possible that the great majority of crash towels and toweling is made with the plain weave

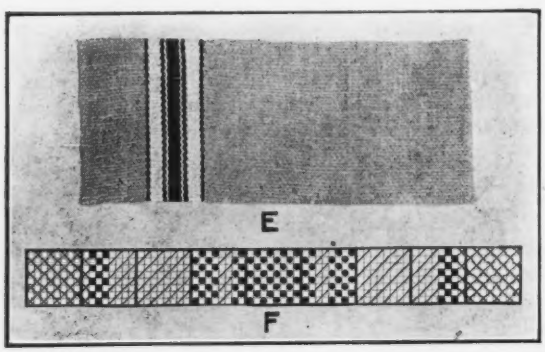


FIG. 8.

(tabby or calico weave), a large number of the slightly more ornamental examples are produced by means of the 2 up 2 down twill. This particular method of interlacing finds many applications in various branches of the textile industry, and hence is known by a variety of names, e. g., common serge, sheeting, blanket, shalloon, cassimere, cashmere, Harvard, Batavia twill, etc.

Particulars of a typical example are reproduced in Fig. 9 where A is a reproduction of a small portion of an actual cloth. In many of these fabrics the weave twills continuously in one direction, but perhaps in as many cases, variety of effect is produced by the introduction of colored border and end stripes, and by alterations in the direction of the twill in various parts of the fabric.

At A in Fig. 9 it will be seen that the twill moves upward towards the right from the selvage up to and including the center blue warp threads, while the remainder of the stripe, and the body of the cloth twill upward towards the left.

A small portion of the sample is transferred to point paper at B, Fig. 9, where 8 picks and 40 threads are indicated. The order and coloring of the stripe is—

Red	9	9 =	18	} 21 threads in all.
Blue	3	=	3	}

The red threads are shown at B in solid circles, the blue threads in solid squares, while the grey body threads are denoted by the open circles or rings.

The warp consists of 36 threads per inch of unbleached but boiled linen, and the filling of about 30 picks per inch of bleached linen. The colored stripe threads are, as is customary, of 2-fold cotton. As already indicated, the stripe proper contains 21 threads in ⅞ inch, equivalent to about 48 threads per inch. The stripe, with reference to the remainder of the cloth, is thus crammed in the proportion of about 4 to 3.

The unit weave is complete on 4 threads and 4 picks, and is identical with that shown at D, Fig. 9. This unit, however, is actually introduced here as a weaving plan which would be used for the production of the fabric A when the threads in the 4 harnesses were shown, as indicated by the draft C. An alternative weaving plan is shown at F, along with its necessary draft E; this draft is often termed the skip-shaft draft, and is extensively used in connection with such weaving.

It will be understood that the two drafts, C and E, Fig. 9, correspond to the 40 threads shown in plan B, and that it will only be necessary to repeat the draft for the body threads over the necessary number of threads. The stripe forms a simple but typical example of one use of an arrowhead twill, which is also variously termed, a pointed, a feather, or a herring-bone twill.

The draft of the design B, Fig. 9, is arranged to turn on a thread so as to produce symmetrical interlacing effects on the two sides of this thread, i. e., it forms a definite point, and the ridge-like effect thus produced causes a float of three on both sides of the fabric. This procedure is not

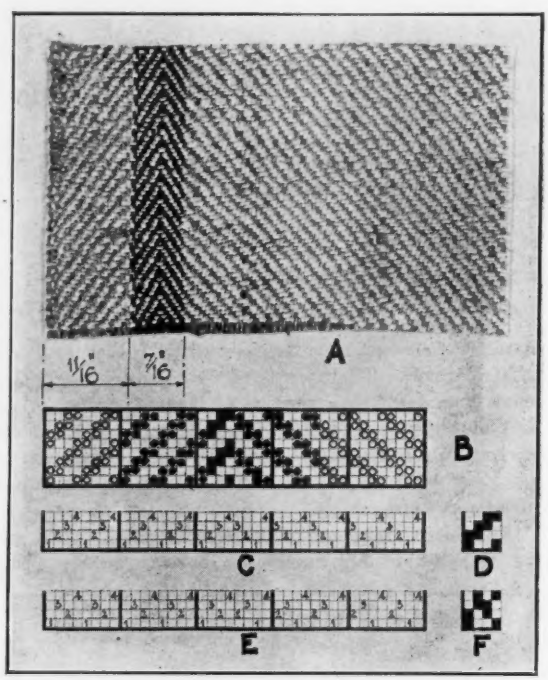


FIG. 9.

always satisfactory, particularly in coarsely or sparsely-set fabrics where the weft float of three tends to cover and thus partially or wholly obscure the weft float of one which forms the extreme point or ridge.

When the fabric is sparsely set, better results, from the weaving or structural point of view, are obtained by turning the direction of the twill by means of what is known as a cutting thread, i. e., a thread that weaves exactly opposite to the one immediately before it. In such cases, however, the pointed effect of the change in the direction of the twill is not so pronounced, but the longest float is over two threads only.

It is hardly necessary to state that the difficulties men-

tioned do not exist in connection with the cloth A, Fig. 9, for in this case the number of warp threads per inch is comparatively high in the stripe border, and the floats are, in consequence, short. Nevertheless, the pattern could have been improved, and a better and perfectly symmetrical effect obtained, if the first and third blue threads had been darwn through mail eyes on the same harness (the second one). Then, with the pointed effect finishing on the third harness instead of on the fourth, the stripe would, as stated, have been quite symmetrical about the central blue thread.

A better quality of a similar type of fabric to that shown

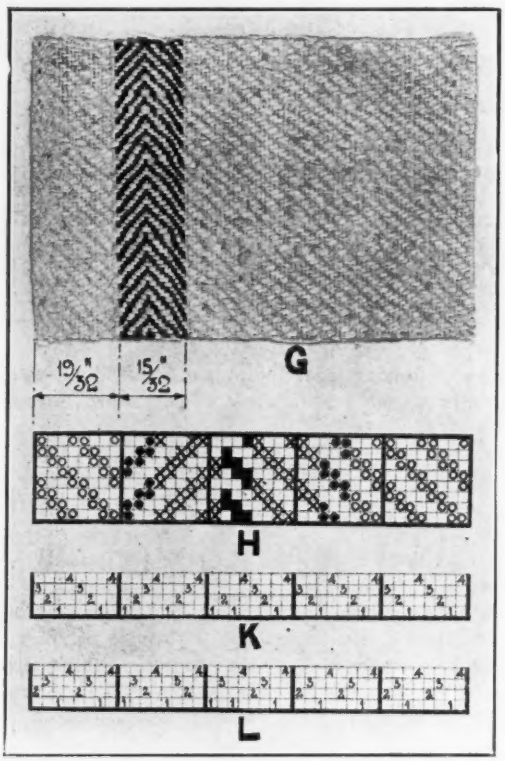


FIG. 10.

at A in Fig. 9 is illustrated at G in Fig. 10, where the ground and selvage border warp as well as the filling are creamed flax, while the stripe is more elaborate and contains three different colors of 2-fold cotton. The order and arrangement of the stripe is as follows:

Red	3	3	= 6	= 21 threads in all.
Yellow	6	6	= 12	
Blue	3		= 3	

The point-paper design for 8 picks (two repeats) and 40 threads—including the stripe—is shown at H. Four distinctive marks are used to typify the various colors; thus, rings or open circles represent the grey body threads, solid circles are used for the red threads, crosses for the yellow threads, and solid squares for the blue threads.

The weave is again the common or serge twill, and alternative drafts are given at K and L respectively. The former would be used along with the weaving plan D, Fig. 9, while the latter draft is arranged for use with the weaving plan F, Fig. 9. The finished cloth contains 30 threads per inch; this number is increased to 45 threads per inch in the stripe itself, indicating a cram in the proportion of 3 to 2 with respect to the reeding for the body of the fabric. There are 36 picks per inch of filling. Even in this example it is quite possible that an improvement in the stripe would result if the twill were made to turn on the central blue thread.

A large proportion of toweling in cotton, linen and union textures, is made from the class of weaves known as crepe or crape. These extremely interesting types of interlacing possess several characteristic features which make them peculiarly suitable for towels and toweling. Crape weaves, when satisfactorily arranged, produce rough and irregular surfaces which materially increase the absorbent properties of the texture. They have no definitely-lined appearance, such as that emphasized by straight twills, and are thus very suitable for the main or ground structure of a towel, where the side borders can be arranged in twills or other weaves in order to give distinctive effects. A third feature is that the repeat of the weave in the cloth is usually not very obvious, and rich effects can be obtained by a

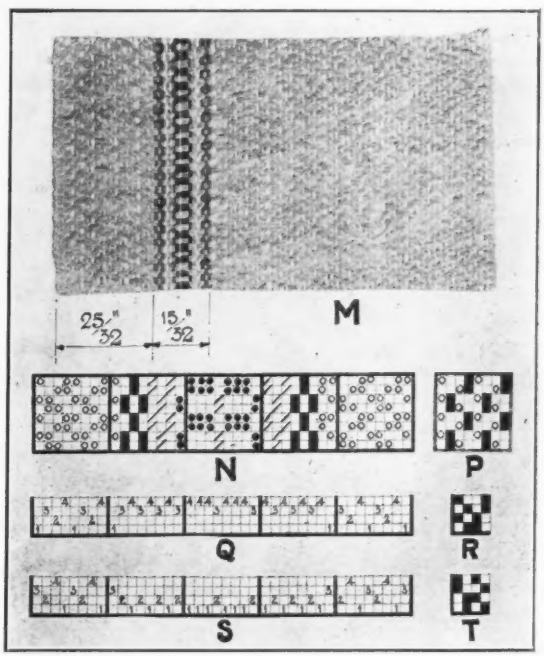


FIG. 11.

comparatively small number of harnesses. These crape weaves are also exceedingly useful for filling up masses of ground or of figure in jacquard-ornamental fabrics for the same class of merchandise.

Crape weaves, in general, should have the floats of warp and filling in practically equal proportions on both sides of the fabric; indeed, when such weaves are used for toweling, this feature is essential, and is a characteristic of all the weaves generally used for this purpose.

A typical example of this style is shown at M, Fig. 11. The all-over effect of the crape weave in this particular instance is somewhat accentuated by the distortion of the filling in the finishing process, a feature which often occurs in this type of weave, and which finds its origin in the different uptakes of the various threads of the weave during the time that the fabric is being produced in the loom.

The cloth depicted at M in Fig. 11 is woven with 24

threads per inch of creamed flax, crossed with 38 picks per inch of a similar but more softly twisted filling. The distance from the selvage to the first thread of the stripe is ¾ inch, while the width of the stripe itself is 7/16 inch. The order of the threads in the stripe proper is as follows:

Blue	3			3	= 6	
White		3	1	3	= 7	= 21 threads in all.
Red			4	4	= 8	

Since there are 21 two-fold cotton threads in the stripe, i. e., in 7/16 inch, which is equivalent to 48 threads per inch the stripe is evidently crammed in the proportion of 2 to 1 with respect to the ground.

The point-paper design for 8 picks (2 repeats) and 40 threads (including the stripe) is given at N; open circles or rings again indicate the body warp threads, while solid squares signify the blue threads, the diagonals represent the white threads in the stripe, and the solid circles or dots show the red threads.

Four units of the weave, which is complete on 4 threads and 4 picks, are given at P; distinctive marks are used here in order to render the weave construction more easily explained. It will be seen that the odd-numbered threads interweave with all the picks in plain weave order throughout, while the even-numbered threads are actuated in 2 up, 2 down and 2 down, 2 up respectively and alternately. The complete weave may thus be regarded as a thread and thread combination of the plain weave and the 4-pick warp rib weave. (It will be understood that the 4-pick warp rib weave merely consists of two oppositely working or cutting threads of the 2 up, 2 down serge twill or sheeting twill.)

At Q and S in Fig. 11 are given alternative drafts for the 40 threads shown at N; these drafts correspond to weaving plans R and T respectively. Draft Q has the advantage of carrying the plain weave threads on the front pair of harnesses; as these threads interweave just twice as often as the remaining threads of the weave, the uptake in weaving will be comparatively greater, and the tendency of these plain weave threads to become tight and to break readily will be increased. It is, therefore, an advantage to have these particular threads on the first two harnesses in order to facilitate repairs, and to minimize the stresses due to travel of harnesses.

Draft S is arranged so that the harness carrying the greatest proportion of the total number of threads is at the front, i. e., nearest the weaver. Each of the drafts given thus possesses advantages of its own. The draft Q would probably be better when there are stripes only at the selvages, and when the breaking of the plain weave threads would be the predominant factor governing production. Draft S would be advantageous were there a large number of stripes in the width of the fabric.

Weaving plans R and T have been chosen so as to have oppositely-working harnesses next to each other; in either case harnesses 1 and 2 work exactly oppositely, and harnesses 3 and 4 are also exact opposites in movements. This arrangement permits the use of a simple top-roller mounting in a tappet loom; indeed, with tappets suitably arranged, two simple plain weave top rollers (sometimes called rocking rollers) can be employed, and this is the usual way in most looms built for 2 up, 2 down twill work, or for weaves where two pairs of cutting threads can be similarly arranged.

A second typical example of crape crash towelling is illustrated in Fig. 12. A reproduction of a small sample of the cloth is shown at U, where it will be seen that the stripe is somewhat more elaborate than that at M in Fig. 11.

The warp for pattern U, Fig. 12, consists of about 22 threads per inch of unbleached flax, with 2-fold colored cotton yarns forming the stripe proper. The filling, which is heavy in comparison with the ordinary warp threads, is creamed, and is inserted at the rate of about 32 picks per inch.

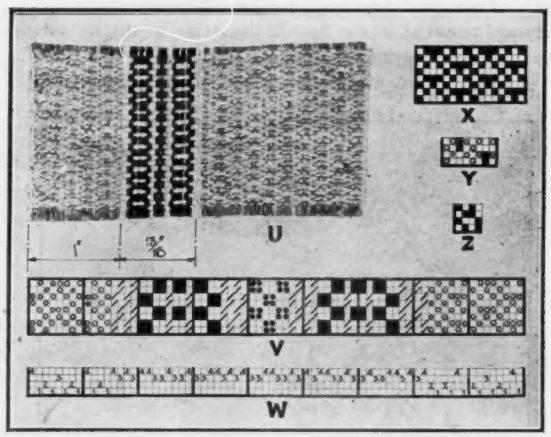


FIG. 12.

Several picks of filling have been removed from the bottom of the sample U in order to show the grouping of the warp threads, which is responsible for part of the general effect of the weave used. The cloth has probably been woven in a 10-porter reed with 4 threads per split. As the term 10-porter signifies 10 porters of 20 splits each on 37 inches, this set is equivalent to 21.6 threads per inch; the difference between 21.6 and the previously mentioned number (22) is due solely to shrinkage from reed width to cloth width during weaving and finishing.

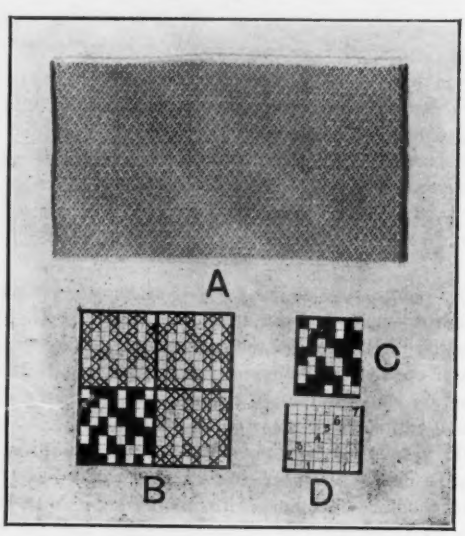


FIG. 13.

For a full description of several methods of yarn setting see "Healds and Reeds: Setts and Porters" by T. Woodhouse. Published by Emmott & Co., Ltd., Manchester.

There are three colors of 2-fold cotton used in the stripe, and these are arranged in the following order:

White	4	1	1	4		4	1	1	4	= 20	}	= 46 threads in all.
Blue		4	2	4			4	2	4	= 20		
Red					6					= 6		

The point-paper design at V indicates the complete structure of 8 picks (two repeats) and the 72 threads which contain the stripe. The various marks used to indicate the different colors have the same signification as those in Fig. 11. The stripe, as usual, is crammed; the threads per inch in the stripe works out to between 53 and 54, as against 22 in the body of the fabric.

Four repeats of the unit weave are shown at X, from which it will be seen that the unit is complete on 8 threads and 4 picks. It bears a great resemblance to the unit

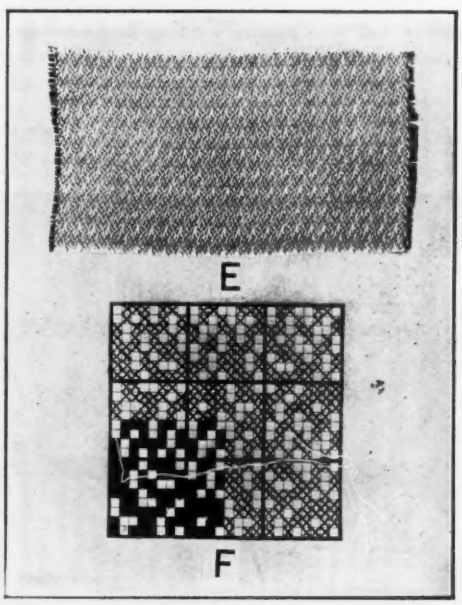


FIG. 14.

weave used in Fig. 11, and the actual difference is better shown by a comparison of P in Fig. 11 with Y in Fig. 12.

Weaving plan Z corresponds to the draft W; the former should be compared with weaving plans R and T, Fig. 11, with which it will be found to be practically identical. Indeed, weaving plan Z may be regarded as merely a different arrangement of weaving plans R and T, Fig. 11, both of which plans could be used for the production of the fabric U, Fig. 12, provided that suitable drafts were arranged. The reader should try these for himself; it forms the best kind of conviction.

Draft W, Fig. 12, is probably the best arrangement for this particular weave, as 6 threads out of every 8 are plain, and are here placed on the front two harnesses, while 4 out of these 6 are similar, and are placed on the extreme front harness.

The characteristic feature of the stripe, apart from the order of coloring and reeding, is the use of the pair of 2 up, 2 down twill threads to produce basket or hopsack effects, both regular and irregular.

Typical examples of fabrics constructed with crape weaves are illustrated in Figs. 13, 14 and 15. The fabrics themselves are rather light for toweling purposes, but the designs could be used or adapted for the production of satisfactory towels if heavier yarns and lower setts were used, say, for example, those indicated in any of the foregoing examples.

The fabric A in Fig. 13 is woven for pattern purposes with white cotton warp and yellow cotton filling. Four repeats of the weave are shown at B, where the unit weave is shown in solid black squares, and the remaining three repeats by crosses. The unit is complete on 8 threads and 8 picks, and the pattern was woven on 8 harnesses with a straight draft. This method is certainly a good one, but since the third and seventh threads in each repeat are alike, the pattern could be woven, if desired, with 7 harnesses, using the weaving plan shown at C and the corresponding draft D.

The origin of the weave is not at all obvious, and this is a valuable feature, but it may be stated that it is obtained by superposition of simple weaves, a method which might be discussed later. The combination gives a very satisfactory crape effect, although, perhaps, it may not be considered absolutely suitable for a towel fabric. Such a fabric, as already pointed out, is most satisfactory when the unit weave exhibits equal quantities of warp and filling on the surface (and consequently on the back also); but

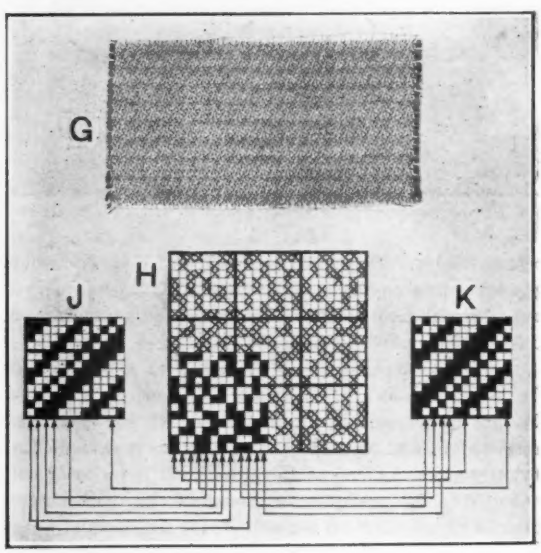


FIG. 15.

in the fabric exhibited at A, Fig. 13, about 61 per cent, or 39/64ths to be exact, is warp. These proportions are obtained from the unit weave and not from the fabric itself, and it will be understood that the actual proportion of warp and filling will also be affected by the counts of the two yarns, and by the relative numbers of threads and picks per inch. When such a design is used, a satisfactory towel fabric can be produced by suitably chosen counts and setts with the object of balancing the apparent surplus of warp shown in the unit weave.

A second example appears at E, Fig. 14. In this case the warp is white and the filling light brown or maize. Four repeats of the unit weave are given at F in the same figure; the solid black squares indicate the unit, and the other three repeats are again shown by crosses. The unit weave is complete on 12 threads and 12 picks, and the cloth would

be woven with a straight draft, and a weaving plan identical with the unit weave in F.

The unit shows fully 65 per cent—to be exact 99/144 or 47/72—of warp on the surface, and in an actual towel fabric, allowance would have to be made accordingly. The crape effect is good, but in certain lights, and by holding the pattern at a particular angle, a twilled effect, running upward towards the right at an angle of about 60 degrees,

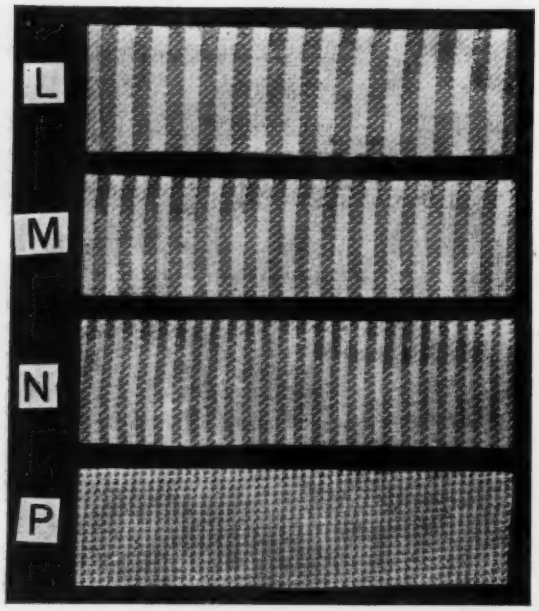


FIG. 16.

becomes visible. This might or might not be a disadvantage, depending on the actual function of the weave in a particular fabric. This weave is also due to the superposition of simple designs.

A third pattern fabric is illustrated at G in Fig. 15. The weave is shown at H where four repeats are given. The unit is complete on 12 threads and 12 picks, and the fabric requires 12 harnesses. This particular example has a white warp and filling of Royal blue. It is probably better suited to the production of towel fabrics than the two previous examples, since the unit weave shows equal quantities of warp and filling on both surfaces. The weave, although obtained by superposed designs, may be considered as having been made by a rearrangement of 6 threads of each of the two straight 12-thread twills given at J and K. The arrow-headed lines indicate which particular threads are used.

Weave J, Fig. 15, is the $\frac{1\ 2\ 3}{1\ 2\ 3}$ straight twill and its threads 1, 2, 3, 4, 6 and 11 are used to form threads 8, 10, 7, 5, 6 and 3 of the crape weave H. Weave K is the $\frac{3\ 2\ 1}{3\ 2\ 1}$ straight twill, and its threads 2, 3, 4, 5, 7 and 12 are used to form threads 11, 9, 12, 2, 1 and 4 of weave H. It is, therefore, evident that irregular methods of combining two straight twill weaves may result in attractive fabrics of totally different aspect.

Figs. 16, 17 and 18 are introduced specially to illustrate the effects in striped fabrics caused by alternating the width of the stripes and retaining equal quantities of colored and white yarns in the warp.

Fig. 16 is a photographic reproduction of four union fabrics, all of the same weight and of a texture suitable for toweling. They are all produced with exactly the same weave, viz., the 2 up, 2 down common or serge twill. The filling is bleached flax tow yarn, while the warp, as already stated, is composed of bleached flax tow and 2-fold blue cotton. The flax tow yarns are single, but all the yarns, single and two-fold, are of approximately equal counts, while there are 56 threads per inch and about 50 picks per inch. The order of the warp differs in the various fabrics and is as shown in the following:

Sample	Blue	White
L	8	8
M	6	6
N	4	4
P	2	2

In the uppermost sample L, Fig. 16, the stripe effect is very bold and distinct, but the distinctness is gradually

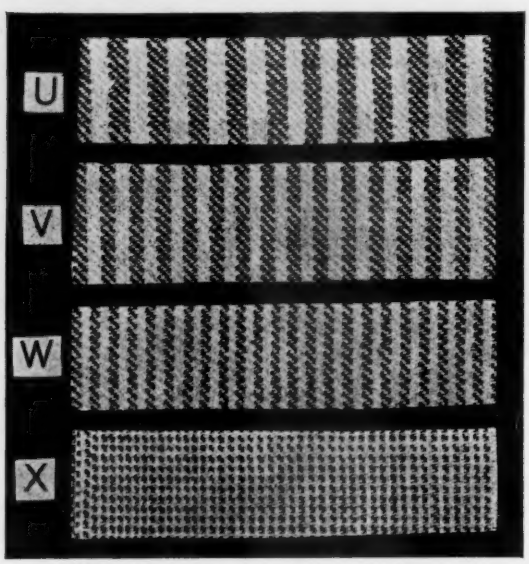


FIG. 17.

lessened in samples M and N, while at P, one color almost merges into the other, and a practically all-over effect is produced. The actual tone of the color is altered; the blue tone becomes less and less pronounced as the admixture of the colors become more and more intimate, while, simultaneously, the general effect appears to become darker. The group forms an excellent object lesson in the changes due to alteration in the width of stripe without altering the relative quantities. A thread and thread combination would produce what might be characterized as a blue-grey effect.

Similar effects can be perceived in Fig. 17, where the fabrics are of a similar nature, but where red warp is used in place of the blue, and a left-hand twill is shown in place of the right-hand twill. The weave otherwise is identical, and the point-paper designs for the four fab-

(*Continued on page* 65.)

The M. M. and the Dynamite Hands

The Sixth Modern Fable

NOT BY AESOP.

The other day I was watching the Master Mechanic and some of his dynamite hands moving a hose house.

"Why do you call 'em dynamite hands?" I asked him once, when he seemed to have a little time to talk. He's an awful busy man, is our M. M. Goes in a hurry all the time, or did until he got promoted the other day, but I'll tell you about that promotion later. Don't suppose it will change him any. Chews his tobacco at 360 r. p. m. and wears a bow on the back of his hat so he can reach back there and tell whether he is coming or going. I marked a checkerboard off on his coat tails once, but he didn't see the joke. Said any fool would know no checkerplayer ever moved fast enough to keep up with him.

Well, anyway, he says, "I call 'em dynamite hands because you see that there rock quarry across the river?"

"I do," I replied, "and what's more I swallow large chunks of it whenever they blast and the wind's right."

"Well," he says, "did you ever notice before they shoot they always blow a whistle over there for folks to get out of the way and then everything goes off, Blam! just like that? Well, that's the way with these here dynamite hands of mine. When the whistle blows, Blooey! off they go. Lots of folks think the engineer blows the whistle so as to let folks know it's stopping time, but he doesn't. He blows it so as to warn folks to get out of their way, and I notice you're generally right in behind 'em," he says, "like the devil in behind a lot of cotton mill overseers and not able to catch 'em on account of them being used to high speed and hard twist."

"Who, me?" I questioned. "My wife likes to have meals prompt, that's all."

Well, as I was saying, he was moving the hose house about fifty feet, and it being small, thought he would just have the gang pick it up and carry it. Where he made his mistake was when he got inside to steady it.

"Here," he says, "Shorty, you and Preacher catch here and Long Hongry and the Deacon on this side, and the rest of you where you can. Lightnin'," he sings out, "how about giving us a lift?"

"Who, me?" I says. "I got something else to do," but he just laughed. That was just his joke, you see. He was always getting off jokes like that. I didn't tell him, but I was making a scientific investigation. There was a cockroach sitting on my desk looking at me to see what I was going to do next, and I thought I would watch him to see how long he would sit there before he moved, and I had already been there two hours just as still as I could be so as not to alarm him. How's that for laziness? I mean the cockroach, of course.

"Now then," says the M. M., "everybody up. Up Deak, up Shorty! Everybody together now! Preacher, I said lift up, not bear down. You ain't supposed to ride, but help tote it. Well, you don't look like it. Now then, all together!"

Then he got inside.

Of course the little old hose house didn't have any bottom. He was just walking along inside helping hold it up and keep it steady, and they were getting along fine, except the door kept banging back on Long Hongry's fingers, so he shut it and slipped the padlock through the staple to hold it. Then Bloo-o-o-o-o went the whistle and down went the hose house and off went the dynamite hands like they were shot in the back with a box of hot tacks and left the M. M. locked up inside.

Language? Well, I'll leave you to judge for yourself. The General Manager was here the other day going around all over the place, and I happened to take a look out to sort of get a line on where he was and I saw him and the M. M. looking at that little old hose house, and the G. M. had his head inside looking all around like he couldn't believe it, and after a while he pulls his head out and says, "I just can't figure out for the life of me," he says, "how you managed to have a fire in the hose house and dang near burned it up. It's all charred up inside."

Do you believe our handsome and popular M. M. told him just what did that? He did not. Said he knew he wouldn't believe it. I wouldn't have believed it myself if I hadn't been there, but language sure is a power when you know how to use it. What I never could understand was how the M. M. figured that I ought to have let him out and why he got sore with me when I didn't. Says I knew he was there, and all I had to do was to unhook the door. That's true, but all the dynamite hands knew he was there too, and I'll leave it to you if it was my place to go there and let him out. I went on home to dinner. The whistle scared the cockroach off the desk, so there wasn't any use to stay there, and besides I knew the madam would be mad if I didn't get there promptly, so I went, and now he says I was too lazy to let him out. What do you know about that?

And then, on top of all that, they went and promoted him to be superintendent. Over my head, too, and me been here twenty years and always put in full time and don't run around all the time like a chicken with its head off, but take time to sit down and think things over. Gets down here half an hour before starting time in the morning and hangs around after the whistle blows at night as if the place couldn't get along without him. Way late one night last week, after I had been home and got supper and started to a picture, I came by and found him shutting down a lot of windows I had forgot and left open, and I had to stop and get out with all the family waiting in the car for me, and go and help him get them shut. Said he was afraid it was going to rain. Well, it didn't and I ought to have shut them, maybe, but I told the second hand to remind me and he forgot it. So how do you expect me to get along here with such sorry helpers?

And now he's boss and the very first thing he did was to light on me all over about the room being dirty and the firebuckets not being full and a lot of other things I didn't know was wrong. If I hadn't noticed 'em, I don't see what right he had to go and snoop around and find 'em, do you? And then he went and threw my chair out of the window and said he'd see if a little weight on my feet would take the pressure off my brain, whatever he meant by that, and

if I hadn't been here so long and the whole place got to where it sort of depends on me like, I'd quit right now.

It does seem like hard luck to have a man promoted over your head thataway after all these years. It looks like they don't appreciate a man being loyal to the company and looking out after their interest and putting in regular time—he says anybody can bring in a broom handle and stand it in a corner twelve hours of the day and it will do as much good as some folks that come in and just lean up against the wall until stopping time, and I said, "Who, me? You can't expect the wall to lean up against me, can you?" but he never could see a joke—well, as I was going to say—

There's the whistle.

Georgia Cotton Manufacturers Hold Meeting

Taxation, compensation insurance rates, boll weevil eradication, and other matters of interest to the cotton manufacturer were discussed at a meeting of the Cotton Manufacturers' Association of Georgia, which was held in the Piedmont Hotel, Atlanta, Ga., on Tuesday, October 2nd. President P. E. Glenn was chairman of the meeting, which was attended by a fair representation of Georgia's financial executives—but the coincidence of the issuance of the Government ginning report and crop estimate on the same day kept a number at home and away from the meeting.

The main feature of the meeting was an address by Colonel Herman H. Swift, of Columbus, Ga., who discussed Georgia's tax problems and needs. Colonel Swift's experience has particularly fitted him for a discussion of this subject; he is one of the leading lawyers of Columbus, and has served as representative of Muscogee County in the state legislature, during which time he was one of the strong protagonists of the state tax equalization bill and the state inheritance tax law. He has for many years made a special study of tax conditions in the state.

A moderate income tax, not to exceed five or six per cent, without graduation and without exemption except where an income would be so small as to make the expense incurred in attempting to collect it more than the tax itself, with credit to be placed toward the income tax for any tax paid under the ad valorem system, and vice versa—this, in brief, was the recommendation of Colonel Swift for the alleviation of Georgia's tax ills. He pointed out that some sort of tax reform is certain for Georgia, and that this was the best method he had been able to devise. He declared that such a plan would reach the intangibles that now escape taxation under the present straight ad valorem system, thus increasing the burden of those who do not pay revenue into the state; it would, he said, provide for an equitable distribution of the expense of maintaining the state. In this connection he approved a suggestion for requiring every adult person in the state to make a return for income tax; and then requiring those whose incomes fell below the exemption outlined to pay a registration fee for making the return. This, he declared, would provide a means for every one enjoying the benefits of the state government to assist in its maintenance and operation.

In leading up this suggestion as a remedy, Mr. Swift recounted some of Georgia's tax history. In 1877, he said, it was provided that all taxation should be uniform upon the same class of subjects, by an ad valorem on property within the limits of the state. This system was satisfactory, he pointed out, because of the fact that Georgia was more of an agricultural state, as industrial development had not begun on a large scale, up until 1903, when, said Colonel Swift, "I think the people of Georgia made the first serious mistake with respect to their taxation system." He said that this was in the placing of a limitation of five mills upon the state tax rate. Prior to the adoption of this amendment, said the speaker, after the legislature had made appropriations, the governor and comptroller general would consider these and could raise the rate to provide sufficient revenue for them in case the existing rate did not suffice.

The limited state rate, however, permits the legislature to appropriate with impunity and then tell their constituents that they are not responsible for the tax rate being increased because it had already reached five mills and "that it made no difference how much they appropriated, the tax rate could not exceed five mills."

PRESIDENT P. E. GLENN

This limitation of the state rate produced another serious effect, said Colonel Swift. This, he indicated, was the fact that by a limited state rate, the counties were encouraged to reduce their assessments and increase their own rates of taxes. "There is no burden of state taxation in Georgia at the present time," asserted the speaker. "The state is limited to five mills. The burdens which we are

(*Continued on page* 87.)

Do You know-

(1) *That the workers in the average plant labor with less than 3 ft. candles illumination?*

(2) *That Daylight-Illumination furnishes as high as 5000 ft. candles illumination?*

THESE are actual facts. Actual light measuring tests with the light meter unfolded them.

How much illumination do your workers have? Is the glass clean so that daylight enters? Or is dirty glass costing you thousands of dollars in low production—too much spoilage — accidents — g l o o m y workers?

REG. U.S. Pat. Off.

Skybryte CLEANER (LIQUID)

Quickly Cleans Dirty Glass Without Muss or Dirt

Without water — without muss or dust Skybryte removes greases and other matter from glass amazingly quickly.

Skybryte Cleaner (Powder) does not scratch. It is economical to use. It does away with sloppy pails of water and objectionable muss.

Skybryte comes in handy 14-oz. containers with sifter top at $5.75 per doz. or $60.00 a gross. Also in:

10 lb. pails at 55c lb.
25 lb. pails at 50c lb.
50 lb. pails at 45c lb.
200 lb. barrels at 40c lb.

Send for a trial order of Skybryte today. Give it the severest test that you can. Learn from actual experience why it has become America's favorite cleaner for industrial use.

Free!

Thirty enjoyable minutes with America's greatest lighting expert. A little book full of facts about light and lighting conditions that will prove very valuable to you. Gladly sent on request.

The SKYBRYTE Co., Keith Bldg., Cleveland, O.

Chicago Branch, 20 E. Jackson Blvd.

What the Southern Mills Are Doing

Extensive improvements are being made by the Erwin Cotton Mills Co., at both the Durham and Duke, N. C., plants, according to recent announcement by J. E. Sirrine & Company, engineers, Greenville, S. C.

Contract for a new 35,000-spindle mill, to manufacture indigo blue denims, and to be erected at Duke, N. C., has has been awarded to J. L. Crouse, of Greensboro, N. C. The mill will be known as Erwin Mill No. 5, and the building will cost approximately $500,000. This development will consist of a two-story, reinforced concrete spinning mill for 35,000 spindles, a one-story, daylight construction weave shed for 1,152 looms, and a modern village. The total cost of the mill is estimated at $2,500,000.

Erwin Cotton Mill No. 2, at Duke, N. C., is to be electrified. The Erwin bleachery at West Durham is to be enlarged, as well as the sheet factory.

An addition of 5,000 spindles is being made by the Delta Land Co., Helena, Arkansas, a subsidiary of Parkhill Mfg. Company, Fitchburg, Massachusetts.

Construction activities have begun on improvements to the Tallassee Mills properties, at Tallassee, Ala. Approximately $25,000 will be spent. In addition to various improvements to the mill, new tenant houses are being erected.

The Swift Spinning Mills, at Columbus, Ga., are erecting five single houses and one double house, to cost approximately $10,000.

Corley Mills, Inc., Cumberland, N. C., have completed 35 new cottages, all equipped with electric lights, and a night line has been started.

It is announced that the Wabenah Mills, formerly the Poneemah Mills, at Lexington, N. C., are to survey the plant with a view of undertaking improvements required to effect a complete modernization. K. H. Thompson is president.

The Davidson Cotton Mills, Concord, N. C., have been incorporated by M. L., J. R., and E. T. Cannon, to take over the two mills of the Delburg-Linden Company, at Davidson, N. C., which were recently purchased by these interests.

A three-story addition to the textile school of the North Carolina College of Agriculture and Engineering, at Raleigh, N. C., will be constructed, it is announced by J. E. Sirrine & Company.

The Marion (N. C.) Manufacturing Co. has improved its mill village by the erection of 50 new cottages and a two-story brick schoolhouse.

A 400-hp. dam is to be erected by the Central Falls Mfg. Co., at Asheboro, N. C., at a cost of approximately $150,000, to develop hydro-electric power for the plant of the company, of which C. J. Cox is president.

The County Moore Mills, Inc., is the name selected for a new mill that has been in process of organization at Hemp, N. C., for some time. W. W. Cowgill has been elected president of the company; J. R. McQueen, vice-president, and Mr. Rowe, secretary and treasurer. Work already has begun on the site preparatory to building, and it is planned to manufacture both yarns and cloth.

The Parker Textile Association, composed of overseers of the various mills in the Parker school district of Greenville, S. C., has been formed. The organization will be more or less a social one, although matters of interest connected with the textile industry will be discussed at the meetings. The officers are: C. P. Dill, chairman; J. T. Bobo, vice-chairman; C. W. McSwain, secretary, and W. C. McAbee, assistant secretary. Among those present at the organization meeting were overseers from the Mills Mill, the Victor-Monaghan Co., the Judson Mills, Brandon Mills, Woodside Cotton Mills, F. W. Poe Mfg. Co., Camperdown Mills, Dunean Mills, American Spinning Co., and the Union Bleachery.

The Greenwood (S. C.) Cotton Mills are erecting an additional story to the office building, which will provide four more offices.

A $16,000 community building is being erected jointly by the Pacific Mills and the Columbia Mills Co., at Columbia, S. C.

The Laurens Cotton Mills Company, Laurens, S. C., has begun a new building program and 20 new houses are being erected in the village. The cottages are to be of the bungalow type, with four rooms, two porches, and equipped with lights and city water. These additional cottages will give the village a total of 210 houses for operatives.

Wallace Mfg. Co., Jonesville, N. C., is to make a survey of its entire plant with the view of undertaking any improvements and additions necessary for developing the property to its maximum efficiency. T. M. Marchant is president.

The Monroe Cotton Mills, at Monroe, N. C., have been purchased by the Manetta Mills, and the name of the mill has been changed to Manetta-Monroe Mills. The officers of the combined organization are: H. B. Heath, of Charlotte, president; R. A. Willis, of Edgemoor, S. C., general manager and treasurer; W. S. Simpson, assistant treasurer at the Lando Mills; G. A. Buchanan, of Lando, superintendent Lando plant; C. W. Walton, assistant secretary and treasurer at the Monroe plant, with David R. Harriman superintendent at Monroe. The mill at Monroe manufactures wide sheetings, and it is understood that extensive improvements will be made. The plant has been placed in operation.

Contract for an addition to the Brookside Mills, Knoxville, Tennessee, has been let. This addition is an extra story to the picker building.

The Planters & Merchants Mills, New Braunfels, Texas, have been granted permission to construct a water power dam across the Gaudalupe River at the company's mill.

The Aileen Mills, Biscoe, N. C., are to install sixty-four 90-inch looms for the manufacture of sheetings.

Marble Falls Textile Co., Marble Falls, Texas, have been organized to build a 10,000-spindle cotton mill. M. H. Merrill & Co., 50 State St., Boston, Mass., are the engineers.

The Mandeville Mills, Carrollton, Ga., have plans for a modern laundry establishment to serve their operatives. The plant is to be electrically operated, and will cost about $50,000, it is stated.

Contract for the erection of 24 four-room cottages has been let by the Hannah Pickett Cotton Mills, Rockingham, N. C.

The Graniteville Manufacturing Company, Graniteville, S. C., has announced plans for the construction of a dye

Barrett Specification Bonded Roof on Arkray Mill, Gastonia, No. Car. Eng.: Roberts & Co., Atlanta, Ga. Cont.: Turner Const. Co., New York. Roofer: C. F. Shuman, Charlotte, No. Car.

Barrett Specification Bonded Roof on Arlington Mills. Cont.: H. B. Patillo, Gastonia, No. Car. Roofer: G. G. Ray & Co., Charlotte, No. Car.

Textile Mill Roofs *Must* be Right—

Here are a few of the principal textile mills of Gastonia, N. C.—"combed yarn manufacturing center of the South." The roofs of these buildings cover machinery and textiles representing an investment of hundreds of thousands of dollars. Should any of these roofs spring a leak, serious damage to equipment and stocks might be caused, with heavy financial loss as a result.

The owners of these mills know that these roofs must be right. Therefore they cover their buildings with the Barrett Specification Roof. They know that this roof represents the lowest cost per-year-of-service. They know that these roofs are bonded for twenty years—that many roofs of this type are in first class condition after forty or more years of service.

Back of the Barrett Specification Roof stand three factors—each one with definite value to mill owners:

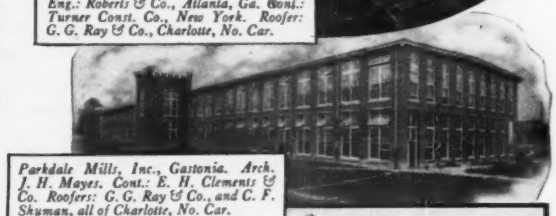
(1) The Barrett Specification (for flat or nearly flat roof construction) prescribes the number of layers of Specification Felt, the amount of Specification Pitch, the top coat of pitch *poured* (not mopped) and finally the wearing surface of firmly embedded gravel or slag. Here is complete assurance that quantity and quality of materials are right.

(2) The man who lays the roof must have a name for dependability. Only such men can obtain the Bond for the owner. No need to check up to make sure that a dependable man is laying the roof.

(3) Highly trained Barrett technical men are on the job to see that The Barrett Specification is followed in every detail. No chance of getting anything but a roof in which every detail of material and construction is exactly according to the specification.

There are two types of Barrett Specification Roofs—Type "AA" bonded for 20 years, Type "A" for 10 years. Send for The Barrett Specification.

Barrett Specification Bonded Roof on Flint Mfg. Co., Mill No. 2, Gastonia. Eng.: Roberts & Co., Atlanta, Ga. Cont.: Turner Const. Co., New York. Roofer: G. G. Ray & Co., Charlotte, No. Car.



Parkdale Mills, Inc., Gastonia. Arch. J. H. Mayes. Cont.: E. H. Clements & Co. Roofers: G. G. Ray & Co., and C. F. Shuman, all of Charlotte, No. Car.

Barrett Specification Bonded Roof on Myrtle Mills, Gastonia. Cont.: H. B. Patillo, Gastonia. Roofer: G. G. Ray & Co., Charlotte.

Barrett Specification Bonded Roof on A. G. Meyers Mills, Gastonia. Cont.: H. B. Patillo, Gastonia. Roofer: G. G. Ray & Co., Charlotte.

Groves Mills, Gastonia. Eng.: Mayes Eng. Co., Charlotte. Cont.: J. D. Grandy, Charlotte. Roofer: A. Y. Bond, Inc., Greensboro, No. Car.

Barrett Specification Bonded Roof on Groves Mills, No. 2. Arch.: J. H. Mayes, Charlotte. Cont.: Brown-Harry Co., Gastonia. Roofer: G. G. Ray & Company, Charlotte.

THE BARRETT COMPANY
40 Rector Street - New York City

The Barrett Company, Limited
2021 St. Hubert Street, Montreal, Quebec, Canada

Barrett Specification Roofs

Bonded for 20 and 10 Years

house and finishing plant. A one-story and basement building will be erected, to be of daylight construction, re-inforced concrete, 371 x 124 feet. J. E. Sirrine & Company, Greenville, S. C., are the engineers.

The Lanett Bleachery & Dye Works, Lanett, Ala., has plans for the construction of an addition which will double the size of the plant, it is announced by Harry R. Stephenson, vice-president and general manager. The contract for the building has been awarded to the Gallivan Building Co., of Greenville, S. C.

The New England Mill Situation.

Conditions in the textile industry of New England have grown less promising in the past month. The revival of business at the end of the summer was not long continued enough to give the mills an opportunity to resume operations in full. It did afford them a chance to move some part of accumulated stocks, though at no time on a profitable basis with the cost of cotton in mind.

The uplift in prices in the cotton market was too rapid to give manufacturers time to buy cotton cheap, even if they were disposed to buy when the price received for cloth did not show a profit on the then lower values. There are very few mills that have bought cotton to carry them into next year. Exceptions exist, of course, but they are few.

The position of the cotton manufacturer at the opening of the cotton year was a hard one. Goods were just beginning to sell after a long period of stagnation. The price of cotton itself, above 21 cents a pound, was not attractive so long as mills could not sell their accumulations nor products at a true mercantile profit. Many mills were in the position of carrying stocks of cotton goods, and with a poor market facing them they were not warranted in investing in cotton, even if they considered it cheap, which it has not been at any time for months.

The vigor in cotton speculation became so serious that at one time it looked as if a public protest against the Cotton Exchange would be organized and it is not yet certain that some action may not be taken to call to public attention the injury that is done to the mill industry by the wide fluctuations in cotton prices arising from speculation pure and simple. Attention has already been called to the matter of seeking to bring about a change of Cotton Exchange rules whereby a legal delivery on a New York exchange contract can be made at any southern cotton point as well as in New York City.

The serious grievance of the manufacturer today is not the high price of cotton, as that is commonly shared by everyone. It is claimed by the mill men that cotton speculation has now become so thoroughly organized in this country that wide fluctuations in price that favor the moves of the speculator, while demoralizing the business of cotton goods merchants, can be readily brought about on any information that would not normally affect the trading price for the farmer.

The government crop estimate has come to be regarded all over the country as something final and accurate, yet cotton men know that it carries no more weight than many of the private estimates. The popular respect for anything put out by the government is naturally great, and a government report is like the sterling mark on silver to those who want to speculate in the staple, and to many of those who traffic in cotton goods.

The great bulk of the literature on cotton that now floods the country emanates from speculative cotton houses and not from cotton dealers, farmers or cotton goods producers or traders. There are many men in the cotton goods trade who believe that there is no more place for cotton speculation than there is for speculation in other commodities and they contend that the benefits supposed to accrue to the farmer and to the trade in general are more than offset by the grave injury done in a year like the present, when cotton is bound to be high because of purely legitimate supply and demand conditions.

The situation is certainly more difficult than anything hitherto seen, a fact brought to wide public attention when the Amoskeag Company announced its intention to close indefinitely beginning October 6. This plant has a capacity of 700,000 spindles and 23,000 looms. Financially it is one of the strongest mills in this or any other country. But its managers contend that it is not good business for them to buy cotton at 30 cents a pound when the country will not absorb a product based on a cotton cost of 24 cents.

The day following the announcement by the Amoskeag Company it was announced that the Fall River mill treasurers had held a meeting to again discuss plans for curtailing production. The mills in that city are operating to about 75 per cent capacity. In New Bedford, 14 miles distant, mills are operating to about 80 per cent capacity. Mills in these centers have sold a great many stock goods in the past two months but are not well supplied with cotton. The dividends paid by the New Bedford mills last quarter averaged only 1.56 per cent on the capital, the lowest average since the world war ended. In some other parts of New England cotton mills are operating from 75 to 100 per cent capacity, the mills of the latter sort being employed chiefly on orders that will expire during the winter.

It is commonly accepted that the root of New England's troubles arise from southern competition. This belief is true to some extent but it does not explain everything in the situation. New England mills have good financial reserves and if competition were desirable, they are well situated to enter upon real competition. A mill such as the Amoskeag, with $28,000,000 in Liberty bonds in its reserves, and with its plant valued on its books at $3,000,000, when it would cost more than ten times that amount to replace it, does not have to hesitate about meeting competition if competition is advisable.

Had this corporation elected this year to have named prices two cents a yard lower than it did, which would have been two cents a yard below cost, it might have lost a million and a quarter of dollars from the inception of its spring season's trade. It would have forced competition that would eventually have closed some mills and wrecked others. It is a grave question whether mill managers would have a right to adopt such a selling policy, from a stockholders' point of view, and it is also a question whether a mill has a right to buy 30 cent cotton when it knows it cannot sell its product on that basis of cost.

It is really a market condition and not a mill competitive condition that has forced the present situation in New England. The lower grades of many cloths are being bought more freely than many of the standard staples. Even be-

H & B AMERICAN MACHINE CO.

PAWTUCKET, R. I.

COTTON MACHINERY

The illustration shows our Latest Improved

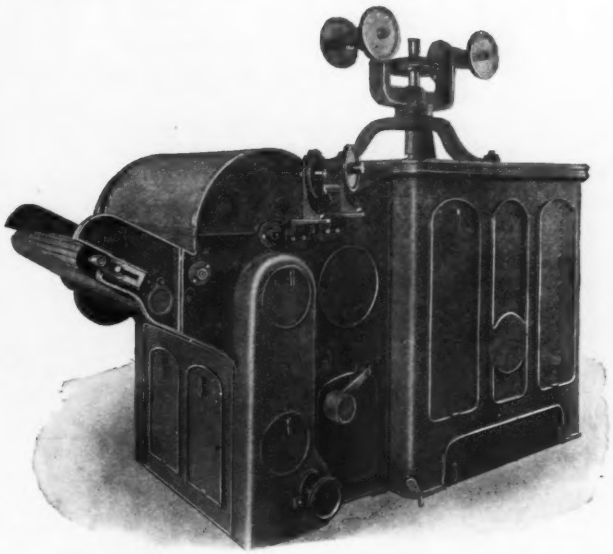
Crighton Vertical Opener

The SIMPLICITY of this machine will APPEAL to you.

The DURABILITY will IMPRESS you.

The RESULTS obtained will CONVINCE you.

This illustration shows a single section "Crighton" Opener, complete with Balanced Rope Drive, Cage Section and Apron delivery. Machines are built without the Cage Section and Apron delivery when desired and installations can be made with one, two or three "Crightons" in a line or section. We can also furnish direct belt drive or individual motor drive.



Special Bulletin sent on request.

Southern Office:

814-816 ATLANTA TRUST CO. BLDG.

ATLANTA, GA.

fore the recent price advances made in mill channels have been passed on by jobbers and retailers, there is a definite resistance to the higher prices and it is going to take some time to break it down.

Half the textiles made are not essential to the preservation of life and in times when purchasers do not want to pay what is asked for textiles they can go a long time without them. This has been shown over and over again. Manufacturers as conservatively inclined as New England men are will not go on producing goods unless they see a reasonable chance for disposing of them at a profit. They have seen cotton jump 25 per cent in value in a few weeks and they have seen it decline 50 per cent in a few months, all within the experience of the youngest of them. While they do not believe that the country's actual consuming desire and power will undergo in the near future any such revulsion as it has in some recent periods, the fact that speculation can do so much with cotton in a few months has unsettled them, and they do not intend to take any more mercantile risks than they can help.

Some of them have stated that even if they could run twice as many hours as they are now permitted to by law, and could thus reduce their costs of production, they would simply be increasing the stocks of goods for what appears to be an unwilling market. That would bring prices down in cloth markets, whatever might happen in cotton markets. During the first few days of October they have seen the cotton market rise and the cloth markets decline. It is no new experience but it is more dangerous when cotton is very high than when it is low. This view of merchandising has nothing to do with the merits of cotton prices as they stand.

The finishing plants have been running better of late than they were in August but they are all still operating on an average of only 70 per cent or thereabouts. The job printers are especially inactive. The bleachers have been doing better but very recently they have begun to show signs of slackening again. It is stated that more engraving has been done for the coming spring than at any time in years, but, while it has all been paid for, the rolls have not been put in work as the demand for printed wash fabrics has not been up to expectations. The wide sheeting mills are running in full and mills making pillow tubings have been more active. There are some of the very fine and fancy yarn dyed specialty mills whose looms are well employed, but they have plain looms a-plenty in need of orders for next month.

There has been an improvement in the combed yarn business but it is still far from being in a healthy condition. Some fine yarn mills will add looms in the next few months. The change in the use of carded instead of combed stock for tire fabrics has brought troubles on the combed yarn mills.

The machine shops are still very busy. One of the largest loom works has orders ahead that will keep them fully employed through March. One-half the work is for new mills, the other for replacements or additions to old mills. The extraordinary development in the South accounts for a great deal of the work that is being done in the cotton mill machinery shops. The New England investment in the South is increasing very fast, perhaps faster than is commonly realized. This does not mean the removal of New England mills nor the decay of the industry, as most news reports indicate, and as many promoters insist upon declaring. Rather, it means that the South offers a better field for additional cotton mill investment and capital seek-

ing employment is wholly impersonal as to its location.

Mills making cotton blankets and fancy napped cottons are well supplied with business and bid fair to remain active for the most of the winter.

Cotton Comment.

BY H. AND B. BEER

New Orleans, October 6th, 1923.

Climatic conditions in the cotton region during the past month were, on the whole, more favorable, and, as a result, the last of monthly government forecasts is for a yield somewhat larger than one month ago—11,015,000 bales vs. 10,788,000, or 227,000 larger than last month's indications.

Owing to the lateness of the crop outside of Texas, however, ginnings to September 25th were only 3,215,000 bales against 3,866,000 last year, of which Texas was credited with 2,185,000 vs. 1,795,000.

The indicated crop by states, according to returns to Washington, is as follows:

Bales	This Year	Last Year
Virginia	48,000	22,000
North Carolina	877,000	852,000
South Carolina	783,000	493,000
Georgia	700,000	715,000
Florida	13,000	25,000
Alabama	741,000	823,000
Mississippi	752,000	989,000
Louisiana	340,000	343,000
Texas	4,168,000	3,222,000
Arkansas	926,000	1,011,000
Tennessee	340,000	391,000
Missouri	198,000	149,000
Oklahoma	945,000	627,000
California	44,000	28,000
Arizona	83,000	47,000
All others	57,000	19,000
United States	11,015,000	9,762,000

Washington advices are to the effect that the average condition of the crop—49.5—is the lowest for September 25th since the first report of 1866, except the condition of 42.2 in 1921. For several states the condition of September 25th is the lowest on record: 31 per cent for Georgia, 20 per cent for Florida, 37 per cent for Mississippi and 47 per cent for Tennessee.

Notwithstanding present prospects are for a yield somewhat larger than last year, the market has held its own, ruling about unchanged for contracts compared with one month ago and a shade higher for spots.

The strength of the market is attributed to the firmness of southern spots, offerings from the interior being light, due to the present small available in the interior as a result of the small carry-over inland on July 31st and light ginnings to September 25th, as denoted by the following deductions:

Bales	This Season	Last Season
Carried over in the interior July 31..	416,000	1,276,000
Ginned to Sept. 25th	3,215,000	3,866,000
Total supply in the South to Sept. 25	3,631,000	5,142,000
Marketed to Sept. 28th	1,948,000	1,853,000
Available in the interior,about	1,683,000	3,289,000

Another feature of the situation of no little importance is that Texas receipts are averaging low in grade, due to the late August and early September rains, and, in consequence, the premium on the better grades has shown a tendency to widen.

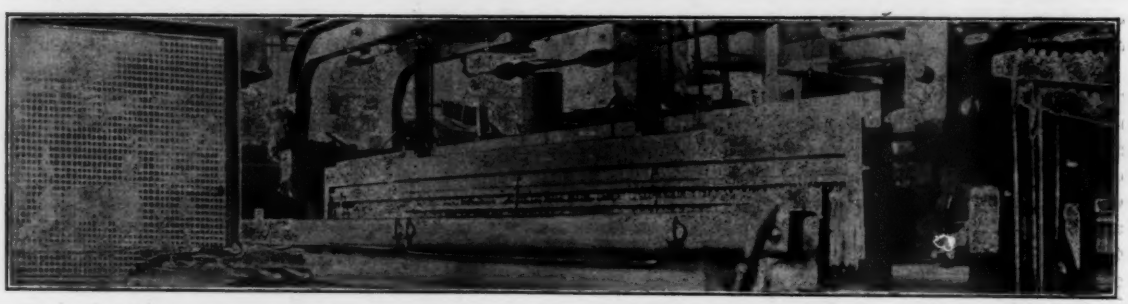
Because of the small stocks abroad for spinners to draw against, mill takings so far this season are running behind last season—1,444,000 vs. 1,868,000, but they have assumed larger proportions of late, for the past week 250,000 against 233,000, and are likely to make a better showing in the future since Europe is commencing to import more freely of the American product owing to exports being large for so early in the season, since August 1st 990,000 vs. 740,000.

WORLD'S VISIBLE SUPPLY.

Bales	This Year	Last Year
Of American	1,836,000	2,395,000
Of other kinds	917,000	1,194,000
Of all kinds	2,753,000	3,589,000

Indications are for the continuance of large exports to Europe, and as the world's visible of American increases, spinners takings will likely increase also.

Of late the market has been somewhat depressed by the closing down of a few New England mills, but as curtailment will probably have a bullish effect on the goods markets, and as the South is financially able to hold its cotton, this feature of the situation is apt to prove only a passing influence.



A GUARD TO PREVENT FLYING SHUTTLES AT THE MILLS OF S. SLATER & SONS, INC., WEBSTER, MASS.
Courtesy National Safety Council.

Three Questions to Ask About Mill White:

1. COST? 2. REFRACTIVE POWER? 3. LASTING QUALITIES?

HOW much will it cost to brighten the interior of your factory? There are two ways to figure it: Immediate cost, and cost over a period of years.

Using the latter method, Wahcolite becomes the cheapest mill white you can buy. For it is the longest-wearing mill white made—proved so. It dries with a tough, hard finish that will not chip, crack or peel. Age cannot turn it yellow. Soap and water keep it new.

Wahcolite is the perfect white finish for walls and ceilings of mills, factories and warehouses. It magnifies the power of daylight, and distributes it evenly to the darkest corners. It keeps daylight on the job more hours per day. Comparative tests have proved the greater refractive powers of Wahcolite.

Get complete information about this master mill white. Write for booklet No. 12, "Keeping in the Spotlight."

For the Outside

To beautify and waterproof all buildings of brick, cement and stucco, use Bay State Brick and Cement Coating. For inside in dye-rooms and places of excessive dampness, Bay State Brick and Cement Coating is especially adapted. Write for Bay State Cement Coating Booklet. No. 12

THE BAY STATER

WADSWORTH, HOWLAND & CO., Inc.
BOSTON

"WAHCOLITE"

Notes About Men You Know.

ROBERT K. EATON, for ten years assistant agent of the Cabot Manufacturing Company, Brunswick, Maine, has been appointed professor of weaving and designing at the textile department of Clemson College. Professor Eaton goes to Clemson well equipped to handle his important work. He is a graduate of Bowdoin College and of the Philadelphia Textile School, where he specialized in weaving and designing. During the world war he was a first lieutenant in the chemical warfare service in charge of inspection of knitted wear.

MALCOLM E. CAMPBELL has been appointed to fill a new position as instructor in carding and spinning at Clemson College. He is a graduate of the New Bedford Textile School, and leaves a position in the cotton testing laboratories of the Firestone Fiber Company, Akron, Ohio, to go to Clemson College.

J. C. LAKE has been appointed to a new position as teaching fellow in the dyeing division of Clemson College. He is a graduate of Wake Forest College and was a laboratory assistant there before taking up his new work at Clemson.

J. T. MCGREGOR, who has been vice-president and manager of the Lowe Manufacturing Company, at Huntsville, Alabama, has removed to Chester, S. C., where it is understood he has a connection with a textile manufacturing establishment.

A. P. MCAFEE has resigned as overseer of weaving at the Valley Waste Mills, LaGrange, Georgia, and accepted the position of night overseer of weaving at the Lanett Cotton Mills, West Point, Ga.

H. W. PITTMAN, general superintendent of the Bibb Manufacturing Company, was recently elected to the executive committee of the Cotton Manufacturers' Association of Georgia, to fill the vacancy caused by the death of the late C. H. Williamson.

HAROLD ARMITAGE is now representing the Universal Winding Company in the South, specializing on the introduction of the company's new No. 90 machine for re-winding gray filling. Mr. Armitage formerly represented the British Northrop Loom Company in England. He is making his headquarters with Frederick Jackson, southern representative in Charlotte, N. C.

A. A. DRAKE, JR., has been elected secretary and treasurer of the Bibb Manufacturing Company succeeding the late C. H. Williamson. Mr. Drake was formerly assistant secretary and treasurer, and C. C. Hertwig has been elected to fill that position.

J. P. HENDERSON, who has been vice-president and general manager of the Miller Cotton Mills, at Waco, Texas, has resigned that position to go to El Paso, where it is understood he will have charge of the construction of a new mill, for which it is stated about $600,000 has been subscribed.

F. E. MACCURDY, who has been secretary of the Miller Cotton Mills, has been chosen as general manager and secretary, upon Mr. Henderson's resignation.

JOHN TALBERT has become overseer of weaving at the Lola Gingham Mills, Stanley, N. C.

A. R. ELLER has resigned as superintendent of the Ronda Cotton Mills, Ronda, N. C.

A. J. KELLY, who recently resigned as night overseer of carding at the Rockfish Mills, Hope Mills, N. C., has become overseer of carding at the Raeford (N. C.) Cotton Mill.

J. T. JORDAN, formerly superintendent of the Mecklenburg Mills, Charlotte, N. C., has accepted a similar position at the Mary Louise Mills, Mayo, S. C.

J. R. TIBBETTS, formerly superintendent of the Southern Manufacturing Company, Athens, Ga., is now vice-president of the Crawford Cotton Mills, Crawford, Ga.

C. W. HODGSON, formerly superintendent of the Crawford (Ga.) Cotton Mills, has accepted a position with the Southern Manufacturing Company, at Athens, Ga.

B. E. GEER, president of the Judson Mills, Greenville, has been elected president of the Peerless Folding Ladder Co., recently organized in that city.

J. E. FIELDS has become assistant superintendent of the Knoxville Cotton Mills, Knoxville, Tennessee.

T. J. MCNEELY recently resigned as superintendent of the Rex Spinning Company, Ranlo, N. C.

J. L. DUDLEY recently was made night superintendent at the W. A. Handley Mfg. Co., Roanoke, Ala.

SAMUEL ATKINS has been promoted from second hand to overseer of spinning at the W. A. Handley Mfg. Co., Roanoke, Ala.

D. E. TAYLOR has accepted the position of overseer of twisting and winding at the Bradley Manufacturing Co., Columbus, Ga.

W. D. MCCOMBS has been made night superintendent at the Barrow County Cotton Mills, Winder, Ga.

JOHN W. LONG has resigned as superintendent and manager of manufacturing at the Oakboro (N. C.) Cotton Mills Co. to accept the general superintendency of the Clover Mills Company, at Clover, S. C.

J. W. CORLEY has been transferred from the superintendency of the Vardry Mills, Inc., Greenville, S. C., to the general superintendency of the Corley Mills, Inc., Cumberland, N. C.

JOHN H. QUINLAN, vice president and general manager of the Cedartown Cotton & Export Co., who, with Mrs. Quinlan, has been sojourning in California for several months, has now returned to Cedartown and is once more in active command at these mills.

D. A. FRY has been promoted to overseer of spinning at the No. 6 Mill, Wiscassett Mills Company, Albemarle, N. C.

O. J. HALL has been promoted from second hand to overseer in carding at the No. 3 Mill, Wiscassett Mills Co., Albemarle, N. C.

JOHN HALL has been made overseer of spinning at the Calhoun Yarn Mills, Calhoun, Ga., succeeding J. M. Hale.

J. C. HARRIS has been made overseer of spinning at the Echota Mills, Calhoun, Ga.

CHARLES LOVE was recently made overseer of twisting at the Aragon Mills, Aragon, Ga., succeeding James Thompson.

The
Tolhurst Automatic Timer
that

TIMES THE LOAD
SHUTS OFF THE POWER
APPLIES THE BRAKE
SIGNALS THE OPERATOR

and

DOES NOT INTERFERE WITH THE MANUAL OPERATION OF THE MACHINE

Greater Output at Lower Costs with the Tolhurst Extractor and Timer

TOLHURST Self-Balancing Extractors equipped with the TOLHURST Timer are daily demonstrating to users that a new standard in extraction volume and costs has been attained.

Timer-equipped TOLHURSTS not only enable the operator to do more work—but assure accurate, known results which reflect greater efficiency in the departments which handle the products after extraction. The TOLHURST Timer is a veritable "automatic operator"—it times the load, signals the operator, shuts off the power and applies the brake. Sturdy construction, fool-proof operation and assured results are but three of many attractive features.

The TOLHURST Timer can be applied to Direct Motor Driven TOLHURSTS now in operation.

Full details regarding Tolhurst Extractors equipped with Timers sent on request.

Western Representative:
John S. Gage
8 So. Dearborn Street
Chicago, Ill.

Southern Representative:
Fred H. White
Realty Bldg.
Charlotte, N. C.

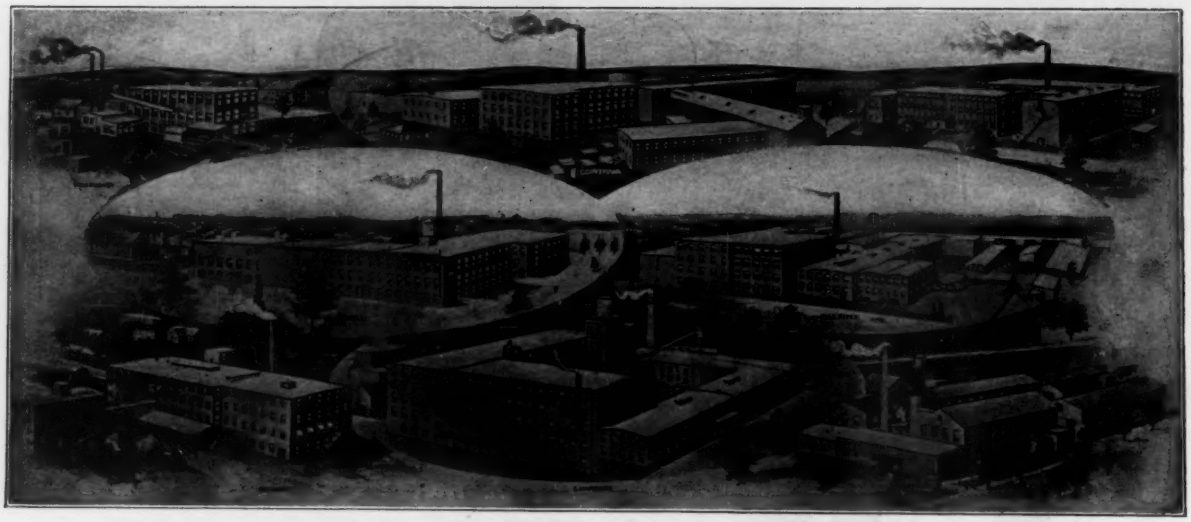
San Francisco Representative:
B. M. Pilhashy
Merchants Exchange Bldg.
San Francisco, Cal.

Canadian Representative:
W. J. Westaway Co., Ltd.
Westaway Bldg., Hamilton Ont.
400 McGill Bldg., Montreal, P. Q.

TOLHURST
CENTRIFUGAL
EXTRACTORS

TOLHURST MACHINE WORKS ESTABLISHED 1852. TROY, N.Y.

New York Office, 111 Broadway



For Your Protection

To prove to you the validity of our statements we will send you a sample of any U S product on approval.

Once you see the excellent workmanship and quality of U S B & S Co. products, once you try them out, we feel sure you will use no other. Our trained staff of experts with years of specialization in their particular field assures you of the best that human skill can produce.

Our 8 large plants and our vast buying power enable us to produce higher quality textile products at a lower cost than any other manufacturer of like products.

U S Bobbins are stronger, lighter and absolutely smooth and true. A system of testing every bobbin on your own spindles eliminates any that do not run true.

The "Stetson" Hand Threading Shuttle is another famous U S Product, the best exponent of hand threading type of shuttle that has ever been put on a loom. Made in every type for Draper, Stafford and Crompton & Knowles Looms.

Automatic loom users who have not already adopted our remarkable new "S EYE Automatic Shuttle" have only to try it to be convinced. Several loom users have approved the "S EYE" Shuttle, realizing that its simplicity, ease in positive threading, uniform tension and freedom from unthreading, misthreads, mispicks and broken picks are good reasons why a weaver of first quality can afford to use no other.

Write us today for sample on approval.

BEAMS
- Cotton
- Rubber

BOBBINS
SHUTTLES
SKEWERS

SPOOLS
- Moquette
- Drawing
- Warper
- Twister
- Jack
- Silk
- Belting

SPEEDERS
WARP FILLING
CAP FILLING
FLAX SPINNING
TWISTERS
TRIPTODS
QUILLS

ROLLS
- Comber
- Underclearer
- Drawing
- Winder

ETC.

U S BOBBIN & SHUTTLE Co.

LARGEST BOBBIN and SHUTTLE MANUFACTURERS in the WORLD

Eight Factories

Providence R.I.

AN OLD TIMER SAYS

When all the overseers boost their jobs—when all their section men boost *their* jobs—the first thing you know all the operatives are boosting *their* jobs and then nothing on earth can hold that mill back from getting a good production and actually being a job worth boosting.

When you find out the men who are knocking the job and those who just don't give a damn, you are beginning to find out how you stand with the people you are working. The first thing that pops into your head, I suppose, is that I am going to say, "Run them off."

What for? Run them off and then hire more who are just as sorry as the ones you have? But, you say, "hire good ones." Yes, of course that would be fine, but how do you know what you are hiring? You can't *always* tell by looking them over.

However, you do know the ones you already have. Why not use a little judgment and by careful, earnest and sincere intentions, see if you can't convert some of the "knockers" and "sore heads" and any other classification you care to give those operatives we find in every line of business who are enemies to *themselves*. Please note that statement—"enemies to themselves." Of course you have already found out from your experience as an overseer or superintendent that a knocker is his own enemy. That is, he hurts himself more than he hurts anyone else or any firm.

Well, now, upon second thought, I don't believe *all* overseers and superintendents have learned that fact, or at least they do not all act like they know it.

But, to get back to the subject I was on—suppose you pick out two or three of those operatives who you know do not worship the ground you walk upon, and drop around to their looms, frames, or other place of work, and engage them in conversation.

Talk to one of them about his work; try to get him to see the good side of things; help him realize that life is worth living after all; let him know that you are genuinely, honestly interested in every person in your employ; that you are doing all you can to make his work run better so that he will make more money; that you believe in a "square deal" to everybody, and that you are there as overseer or superintendent to see that he is treated just like all other employees.

In other words, if you are honest, square and conscientious yourself, you can oftentimes win a man over by proving to him that you are. And that he is just as much a part of the organization as you are. He fills one place, you fill another; neither one of you could get along without the other.

I do not mean those exact words, but I do say that most all people who are working for you can be classed as human beings, and if you are the right kind of human being yourself you can win over to your side, so to speak, many of them that you now class as "knockers," "sore heads," and whatnot.

Human nature is one of the deepest and most wonderful studies we have, and also one of the simplest.

That statement sounds contradictory in itself, I'll admit, and I cannot go into detail at this time to try to fully explain myself, but will devote an "Old Timer" page some of these days to such an article.

One of the hardest things about human nature to explain is why people will not apply to *other people* the same things which will affect themselves. Just one crude illustration to give you an idea of what I mean—

You can pick out the homeliest, ugliest old maid of your acquaintance and begin to pay her a few little compliments, and see how quickly she will respond. If you tell her she is looking much younger than usual; that she has on a pretty dress; that she has pretty hair, etc.—the first thing you know she is looking for you every time you are within a mile of her, and you can see she has "spruced up" to beat the band.

Yes, you say, any fool knows that. And I will admit it, but do they all know how to use that knowledge in business, in their work?

Go back now and read again the statement I made and then shut your eyes and give it serious thought.

Did *you* ever put on a new suit of clothes and have some one or two or three people tell you how well it fitted you, and how well it looked on you? And do you remember just how you felt toward that suit? Did you throw it away or sell it to some darkey for a few dollars? Well, not hardly!

Human nature is *so* simple!

But, don't misunderstand me, in making these simple illustrations, to say that a man can go around spreading whitewash on everybody and get away with it. No, a thousand times, no. But if your thinker will work at all you can catch the thought I am driving at, and begin to study human nature from your own angle and profit by it.

I don't know of a nobler piece of work, or a thing that will give a man more genuine pleasure than to make a friend out of an enemy. Not especially an open enemy, but one of those fellows who you know is not pulling with you, a man who you know is not loyal to you, a man who is not cooperating with you in your work.

Neither do I mean to say that it is an easy task. You must be willing to sacrifice your own feelings many times;

(*Continued on page* 45.)

- - *and* San Francisco and Los Angeles

Ernst & Ernst, having opened offices in San Francisco and Los Angeles, now extend from coast to coast.

The scope of the organization, with successful offices in forty-two principal cities throughout the country, measures the value of Ernst & Ernst service to modern American business.

Ernst & Ernst come to the Pacific Coast with the specialized knowledge and experience, the broad viewpoint as a national institution—desired by business there.

They will make available the best plans for executive control thru facts and figures; suggest the economies, improvements and stimulus of better methods.

They will serve banker and borrower by advising the well-planned Business Budget and Certified Balance Sheet.

Briefly, they will satisfy the requirements of the Pacific Coast for proven means to an even more rapid business growth—safe and steady growth—in size, in profits, in power to serve.

ERNST & ERNST

AUDITS—SYSTEMS—TAX SERVICE

SAN FRANCISCO 887 TO 893 MILLS BUILDING LOS ANGELES: 634 TO 638 CITIZENS BANK BUILDING

NEW YORK	RICHMOND	DETROIT	PITTSBURGH	INDIANAPOLIS	NEW ORLEANS
BUFFALO	CLEVELAND	CANTON	CHICAGO	ST. LOUIS	DALLAS
ROCHESTER	CINCINNATI	DAYTON	MILWAUKEE	KANSAS CITY	HOUSTON
BOSTON	TOLEDO	GRAND RAPIDS	MINNEAPOLIS	OMAHA	FORT WORTH
PROVIDENCE	COLUMBUS	KALAMAZOO	ST. PAUL	DENVER	SAN ANTONIO
PHILADELPHIA	YOUNGSTOWN	WHEELING	DAVENPORT	ATLANTA	WACO
BALTIMORE	AKRON	ERIE			

FEDERAL TAX OFFICE: 910 TO 918 MUNSEY BLDG., WASHINGTON, D. C.

No "bad cloth" when you weave with "DUPLEX" FLAT STEEL LOOM HARNESS

STEEL HEDDLE MFG. CO.

GREENVILLE PHILADELPHIA PROVIDENCE

Southern Office

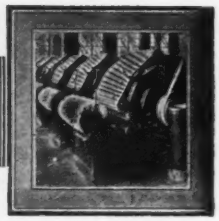
509 Masonic Temple **Greenville, S. C.**

Hampton Smith, Southern Manager

N. B.—We are the sole Manufacturers of Nickel-Plated drop wires for every kind of loom.

How Other Men Manage

Practical Discussions by Cotton's Readers on all varieties of Mill Subjects



We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

Likes Filling Wind.

EDITOR COTTON:

I should like to have some of your readers give their views on the question of which is more profitable to a mill, warp or filling wind? I will give my experience in regard to both. We were spinning from 26 to 80s on small bobbins, warp wind. We had 22 spoolers and they could not keep up with the yarn. We changed the spinning from warp to filling wind, bought bigger bobbins, took all the pockets off the spoolers and bought spindle and tension combined. After a while, when the girls got used to the change from pockets to spindles, we had to stop some spoolers, and it got so that the spoolers were waiting all the time. Finally, we stopped six permanently, which was a saving of twelve girls' wages, at an average of $18.00 a week, or over $200 dollars a week on the spooling end. We had less knots as there was more yarn on the bobbin, less waste because a bad bobbin on filling wind is easier to fix than a bad one on warp wind. We tried quite a few patent tensions until we got what we thought was the most perfect. I omitted to say that we speeded the spoolers up. Riverside (Mass.)

Book Knowledge and Education.

EDITOR COTTON:

The letters on the value and application of a college education in the September number of COTTON not only are interesting, but point the way toward lessening the wrangle that often accompanies a consideration of college training. College men who appreciate the real object and value of their training very seldom arouse antagonism to, or among, the so-called practical men. It is well known that men without college training become as efficient and as valuable in a particular calling as do the college bred. The most important feature, to my mind, is the matter of time. If a certain job demands a given amount of knowledge, skill and judgment, it is certain that the man who holds it down successfully possesses the necessary qualifications no matter how or where they were acquired or how long it took to acquire them. The great advantage of directed (school) training is that it may be completed in a much shorter time, thus affording the student more time in which to profitably apply it. For this reason, if two young men possess the same degree of intelligence (natural or native ability) we are justified in expecting an earlier development of personal possibilities and of material success from the one who has been carefully directed in acquiring fundamental knowledge. The one who must direct his own energies and acquire his fundamentals unaided may know just as much in the end as if he were college trained, but it will take him a great deal longer to acquire it.

Most all people entertain misconceptions of some kind; erroneous notions due to misguided thoughts or incorrect statements. Some college graduates believe that they represent a finished product, from an educational viewpoint, instead of possessing one of the ingredients of an education. College literature often tends toward such a misconception, because of too much emphasis being put on the immediate benefits after graduation. To my mind, it would help some if the difference, or rather distinction, between *book knowledge* and *education* could be more clearly depicted to high school and college students. To many persons there is a "difference without a distinction," with the result that a valuable fact is lost sight of. Probably many of us know of people who possess much book knowledge, and comparatively little real education.

Education represents a compound of which book knowledge (school training) is an ingredient, and although of great importance, it is not the only one. Bread is a compound. While flour is the most important ingredient, since it distinguishes and characterizes the *kind* of bread, yet it is only one. Experience and perseverance are to education what water and yeast are to the compound, bread. Experience represents time, which may be likened to the baking process, in obtaining the finished product.

College men construct machines in the mechanical and electrical laboratories; compounds and analyses are made in the chemical department; a line of railroad, streets and boundries are "run" in civil engineering, and cases are tried in the law school. But this is not *experience*. Such work merely is an illustration, and a brief one, of the method of applying certain book knowledge to constructive undertakings. It lacks the essential elements of experience, because the commercial *effect* of the outcome of such application is lacking and no personal responsibility for such *effect* is borne by the experimenter. Because of the lack of responsibility, the failure of an experiment in a school laboratory means but little, since repetition involves no serious encroachment on time nor the incurring of expense to a prohibitive extent. Consequently, whether failure is due to the individual or to natural and uncontrollable causes is a matter that impresses the student much less forcibly than it does after graduation.

Safeguard your plant from "cold-night" fires

ON cold fall and winter nights, tramps and "hangers-around" seek the wind-sheltered walls of your buildings. Keep them a safe distance away.

Protect your plant with a high, unclimbable, impregnable Anchor Post Chain Link Fence.

Anchor Post Chain Link Fences are made of strong steel wire, No. 6 gauge. *Drive-Anchored* steel posts keep them in constant alignment. Every part heavily *galvanized throughout*.

Phone, write, or wire for complete information.

ANCHOR POST IRON WORKS
52 Church Street New York, N. Y.

Branch Offices

BALTIMORE, MD. 309 W. Franklin St.
BOSTON, MASS. 79 Milk St.
CHICAGO, ILLINOIS 8 So. Dearborn St.
CINCINNATI, OHIO 141 East Fourth St.
CLEVELAND, OHIO Guardian Bldg.
DETROIT, MICH. Penobscot Bldg.
HARTFORD, CONN. 902 Main St.
INDIANAPOLIS, IND. Lemcke Bldg.
MINEOLA, L. I., N. Y. 167 Jericho Turnpike
PHILADELPHIA, PA. Real Estate Trust Bldg.
PITTSBURGH, PA. 541 Wood St.
ROCHESTER, N. Y. 48 Berry St.
ST. LOUIS, MO. 604 La Salle Bldg.

Sales Agents in Other Cities

Anchor Post Fences

FIRM *~because anchored*

PERMANENT *~because galvanized*

A man holding two ounces of coal in the palm of his hand may not realize that he has in his grasp sufficient potential energy to move 2,000 pounds a mile. To obtain such an effect requires the finished product, viz., a combination of fundamentals and experience. Likewise, on graduation a college man may possess great potential possibilities, the realization of which requires experience, and experience means work and time. Therefore, when a college man, fresh from the class room, realizes that he may be finely equipped for great work, but is just beginning, he is anxious to work and obtain experience in the *use* of his possessions. In doing this he not infrequently adopts precisely the same course as the man less favorably equipped. In all such cases there is but little to cause antagonism to any class of workman, for the reason that a beginner seldom suffers from excessive egotism.

Apprentice (Ohio).

Lap Variation and Its Results.

EDITOR COTTON:

I am glad to see that "Skiddoo No. 23" comes back at me in the September number about my foolish solution of his spooler problem which appeared last February. While it does seem necessary to relieve the monotony of every-day humdrumery with an occasional laugh, it is always bad taste to make the laugh at the expense of the other fellow, especially one who, like Hashimura Togo, "asks to know." I was a little afraid that "Skiddoo No. 23" would get mad and sit down and am glad indeed that he took my guying in good part for I would hate to think that any foolishness on my part had closed the pages of this splendid practical department to anyone. The truth of the matter is that I could not figure the spooler production and took refuge in a flippant answer.

In regard to the variation in the weight of laps and yarn, it has fallen to my lot to weigh and break yarn in a number of mills, and I have yet to find one in which the yarn does not show a considerable total variation from time to time. There is no justifiable excuse for the general run of the yarn to be as far off the number as "Skiddoo No. 23" mentions, where a shipment of yarn supposed to be 50s averaged 48s with a variation down to 46s, but in individual weighings there is always a variation which I have often thought a good many mill men shut their eyes to and refuse to acknowledge. I remember a good friend of mine who, in speaking of another mill, said that there was something wrong there, for the yarn varied as much as two numbers, and I remember how disgusted he looked when I replied that if that was all the variation they had I thought the mill was doing excellently. He was a good superintendent, and his mill was running well, but nothing would have induced him to acknowledge that much variation in his yarn, although I afterward found out that he had that much and more at times.

I do not mean to say that this variation takes place over the mill as a whole. I do not mean that the spinning room will make 50s yarn today and 46s tomorrow, but only that weighings taken from a small number of bobbins will often indicate such a condition which proves that there is a constant, and sometimes wide, yard to yard or hank to hank variation, although the general production will average right on the dot. There is no doubt in my mind that these variations come from somewhere in the preparatory processes and that lap variation is one of the most frequent causes. Take, for instance, the piecing up of the lap behind the card. Do you realize how hard it is for the most careful person to make a piecing that will not affect the weight of the sliver at that point? If you have never tried it yourself, do so and weigh the result. What then must we expect to happen when the ordinary hand, with nothing ahead of him but Saturday and pay day, and nothing on his mind but whether there will be beans for dinner or maybe collards finds himself a little behind in his work and lays a line of laps the ends of which are placed, say, one inch over the ends of the old laps? I think this is a very moderate supposition. I have seen them lapped as much as six or eight inches.

Well, that makes a double lap, doesn't it? And a double lap makes double sliver which should break down at the trumpet but which more frequently goes through, and which would make 25s yarn where we are trying to make 50s if it were not for a lot of doublings which fortunately interfere to keep harassed mill men on the pay roll and out of the funny house where "Skiddoo No. 23" seems to think I expect him to go. Nevertheless, it produces a variation which cannot be overlooked by the most self-satisfied of mill men and which can only be reduced by careful training of card hands. In regard to the yard to yard variations of laps and sliver, the first mill I ever worked in put me to making a lot of such tests which covered a period of about three months and which produced results so surprising that they frequently took refuge in the assertion that I had made a mistake.

I firmly believe that laps will vary as much as 12½ per cent from one yard to another, and the only way I know of to figure the result on the yarn is to say that 12½ per cent of 50 is 6¼, which will make it run from 56¼s on the light side down to 43¾ on the heavy side, if our old helpmates, the doublings, do not cover some of it up. Nor is lap variation the only possible cause of yarn variation, as we all know. Remember that I am referring to variations within comparatively short lengths. There is no reason why such extremes should show up in the general production as "Skiddoo No. 23" seems to think was meant by the members of the Southern Textile Association. There is no reason why a mill which sells 50s yarn should not be able to deliver a shipment of yarn which will average 50s. It is being done.

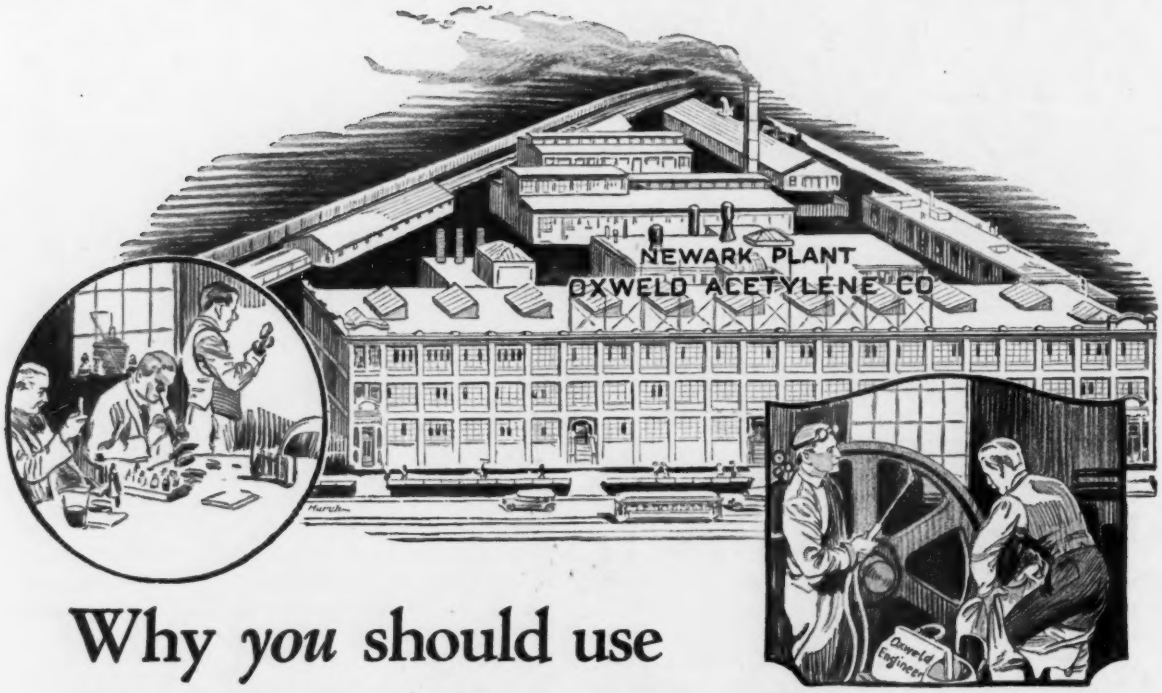
Non Compos (Ala.)

Frame Speed and Cone Outline.

EDITOR COTTON:

In reading the various discussions in COTTON on the fly frame, I notice some contributors state that a variation in the speed of the frame requires a different outlined cone, if I understand them. I wish to call attention to an error in this. The speed of the frame does not at all affect—in fact, it does not enter into—the equation of the curve for the outlines of the cones. I will leave out the mathematical part of the proof and just say that the curve is a hyperbolic curve regardless of the speed. Anyone interested enough and who doesn't mind a little mathematics may find some interesting reading on this in Taggart's "Cotton Spinning."

H. H. Y. (Mass.)



Why *you* should use *Oxwelding* and Cutting Equipment

When you install Oxweld Welding and Cutting Equipment you put into your plant far more than highly efficient apparatus.

You automatically open up to your plant or shop all the possibilities of the oxy-acetylene process itself.

Our interest in you does not cease after you buy an Oxweld equipment. We constantly advise and assist Oxweld users. We want you to get full measure of efficiency from your outfit and to extend its use to the limits of known possibilities. The Oxweld organization, the largest of its kind in the world, makes this possible.

Oxweld Resident Engineers, in over fifty cities, will study and advise on your individual needs. You get the benefit of latest economical practices as encountered in the entire field or developed in our factories and laboratories.

The oxy-acetylene process is marvelously flexible and undoubtedly will fit into a score of places in production, repair or salvaging now unrealized by you. We stand ready to give you freely full benefit of our knowledge.

OXWELD ACETYLENE COMPANY
Newark, N. J. Chicago San Francisco

Oxweld

WELDING AND CUTTING APPARATUS

World's Largest Manufacturers of Welding and Cutting Equipment

Analysis of a Ribbon.

EDITOR COTTON:

In my opinion, the 1⅞-inch width brown ribbon for hat bands, submitted to you by your correspondent and shown in Fig. 2, has been made in the following way and from the particulars submitted.

The ribbon is composed of silk warp and cotton filling, and is approximately 1⅞ inch wide. There appears to be about 350 threads per inch of warp and 50 picks per inch of filling. A short length of the ribbon, after analysis, yields the undernoted results—

550 lengths of warp, each 1¼ inches long, weighed 1.02 grains, hence the count of the warp in spun silk or in cotton is—

$$\frac{550 \text{ threads} \times 1.25 \text{ inches}}{36 \text{ inches per yard} \times 840 \text{ yards per hank}} = \text{number of hanks or fraction of a hank,} \frac{1.02 \text{ grains}}{7{,}000 \text{ grains per pound}} = \text{weight in pounds or fraction of a pound, and since the number of hanks divided by the weight in pounds equals the count, it follows that—}$$

$$\frac{550 \times 1.25}{36 \times 840} \div \frac{1.02}{7{,}000} \text{ or,}$$

$$\frac{550 \times 1.25}{36 \times 840} \times \frac{7{,}000}{1.02} = \text{approximately 156s silk or cotton.}$$

But as the warp threads were twofold or two ply, the 156s = 2/312s, or, say, 2/300s silk or cotton.

In regard to the filling, 62 lengths, each 1⅝ inches long, weighed 1.4 grains. Hence—

$$\frac{62 \times 1.625}{36 \times 840} \times \frac{7{,}000}{1.4} = 16.6\text{s cotton}$$

The cotton filling, however, is 4 fold or 4 ply, therefore the 16.6s = approximately 4/64s or probably 4/60s cotton.

The body of the fabric is perfectly plain, but in virtue of the difference in thickness and in number of the warp and filling, the effect is a warp rib, i. e., the weft covered completely on both sides. The selvages are 2 up 2 down warp rib, but it is necessary to arrange them so that the filling will be securely caught at both selvages. Thus, in Fig. 1, the weaves A and C represent the interweaving for the two selvages, and weave B that for the body of the fabric. A few repeats of each are shown. All three plans are combined in the design D, but 8 threads only of the plain portion are shown. It will be noticed by curved arrows, which indicate the turning of the weft at the selvages, that a perfect selvage will be formed. The draft is shown at E, indicating 6 harnesses, while the plan for operating the harnesses is that shown at F. It is quite probable, however, that more than two harnesses would be required for the body of the cloth since there are so many threads in a small width; if so, a corresponding alteration would require to be made in the plan unless each set of harnesses were tied together and operated as two single sets.

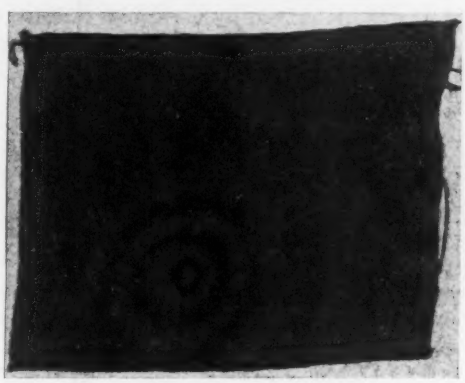


FIG. 2.

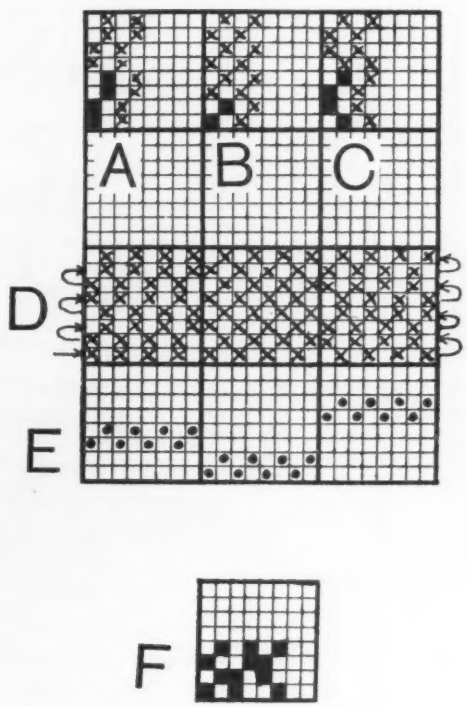


FIG. 1.

The warp would be prepared in the ordinary way by any of the types of silk or cotton machinery; 350 bobbins or cheeses, probably the former, would be placed in a creel and the threads run on to a narrow warp beam, which itself would be only a large bobbin. When the number of bobbins is very low, the threads may be woven direct from bobbins. The quilling will depend upon what type of loom is used. Multiple fabric looms are used extensively for such ribbons, but the ribbons may be woven in small looms fixed to benches, in which case the filling would be wound in the form of small cheeses or cylinder-shaped packages. Groups of 8, 10, 12 or more of such looms can be placed side by side, and the picks per minute may vary from 200 to nearly 300 per minute. In multiple ribbon looms, however, the speed is much lower, and in many cases may not exceed 100 picks per minute. The speeds, however, vary, and no definite number can be fixed. Similarly, the efficiency percentage will vary; it may be below 80 per cent in some works and above in others.

Smallwares.

Indanthrene
Helindon
Thio-Indigo
Hydron
Algol

and other vat dyes will be imported
by us direct from the manufacturers

FARBWERKE VORM. MEISTER, LUCIUS & BRÜNING
FARBENFABRIKEN VORM. FRIEDR. BAYER & CO.
CHEMISCHE FABRIK GRIESHEIM-ELECTRON
LEOPOLD CASSELLA & CO.
FARBWERKE-MÜHLHEIM
KALLE & CO.

Also a complete line of Acid, Basic, Chrome, Direct and Sulphur Colors, Intermediates, Cotton Finishes, Turkey Red Oils, Soluble Oils and Leather Oils.

Manufactured by the following and other American manufacturers—

CONSOLIDATED COLOR & CHEMICAL CO.
CENTRAL DYESTUFF & CHEMICAL CO.
WILLIAMSBURG CHEMICAL CO.

H. A. METZ & CO. Inc.
One-Twenty-Two Hudson Street, New York City.
Boston Philadelphia Providence Chicago Charlotte San Francisco

An Old Timer Says—

(*Continued from page* 37.)

you will have to fight that nasty mean feeling of revenge—of wanting to get even, or wanting to do some mean little trick to a fellow because you have the authority or because you just want to show him you can do it, or want to show him you are *Mister* So-and-so, and he had better watch his step. No! You have, above all things, got to be a *gentleman* in every sense of the word.

Just think how easy it is for you to pick out the men you have confidence in, the men whose advice you feel you can ask for and get what they honestly believe is best for you; the men you can go to when you are in trouble and confide a secret to them; the men you can *trust*.

Well, now, darn it, the point I am driving at is how many of those men do you suppose can trust *you*?

Some few Sundays ago I visited a friend who is an extensive farmer. His father was a successful farmer before him. While we were looking around at the fine stock and cattle, a very old, gray-haired darkey came to the barn, took out his keys, unlocked the crib, and began to get out corn to feed the stock.

The land owner saw I was watching the old darkey, and he began to tell me about him. He said, "That old darkey carried the keys to my father's crib and meat house, and he is now too old and feeble to work, but we still depend upon him to look after the stock and carry the keys.

"On Sundays we have always let him have a horse to ride to church, while the other darkies had to walk. He sleeps there in that little house in the back yard and gets his meals here in the kitchen."

In other words, that old darkey had a good home, even after he was too old to work. Why? Anybody can answer, of course.

Now if he had been a chronic grumbler, if he had always opposed his employer in everything he undertook to do—well, it is useless to say more, except to suggest that you point out to the young man who is running a set of looms, or doing any other kind of work, that he should remember there is a shortage with most all firms for material to make foremen out of, and a foremanship is the first step toward putting him into a position to be able to show the world what is in him.

Even in large families there is generally one child the parents can *trust* more than the other children.

Can your employer trust you?

The actual earning power of all individuals, speaking generally, is practically the same. That is, a man of average physique can cut about as much wood as other men, or shovel as much dirt, plow as much cotton, or run as many looms.

What is it, then, that makes such a difference in the pay envelope?

If you owned a large farm and were having all your farming done by day labor which required the employment of, say, twenty men, and you should get badly crippled so you could not look after the farm—which one of the twenty men would you appoint as foreman?

The answer, of course, is obvious. You would pick out the man, first of all, whom you thought you could trust.

Then you would raise his pay.

Mr. Superintendent:

You frequently study the question of team work and its effect on production. You are always striving to induce your men to consider the welfare of the mill, the organization as a whole, instead of selfishly seeking the success of a single department. You know that your success as an executive hinges largely on your ability to accomplish this one thing well. Knowing this to be true, we are going to try to help you.

On another page of this number of COTTON we are publishing what is really an announcement, only it is written by Mr. McLaurine instead of by the Editor. It is entitled, "Human Relationships in Industry." Turn to it and read it carefully. It tells you what we are planning for your use, but unless you really do use the suggestions that are to follow, as the series progresses, neither your mill nor yourself can hope to be benefited.

Should you care to ask for further information or advice on any of your special problems as they may arise, a letter to the Editor will secure this cooperation for you without cost either to you or your mill.

We shall be interested in having you advise us when you take up this work and from time to time on your progress.

The Editor.

Why? Because he would produce more than any of the other nineteen men? No. In fact, this foreman would be compelled to stop producing for you with his hands, because it would consume all of his time to see that the other nineteen men chopped out your cotton in the way you wanted it done, attended to your stock and cattle, kept the tools in fix, and see that none of them was lost, etc.

In fact, you are paying this man more money than the other men because you can *trust* him to look after your work just as if the property belonged to him.

This reasoning is so simple that it is almost impossible to account for the way some men do their work.

The desire to advance is born into every man; still some will do their work exactly contrary to what they know is the proper way to succeed.

To illustrate the point I am trying to bring out: Suppose, just to satisfy yourself, you pick out five or six men that you believe would be the last men you would ever think of promoting. Pick out men who you know are criticizing everything that the management does, men who you know try their best to discourage all of their fellow workers every time they have the chance, men who you know give you a knock every time they possibly can—pick out some of this kind of men and put this question to each of them: "What, in your opinion, does it take to enable a man to advance to the position of farm foreman, foundry foreman, cotton mill foreman, or any other kind of foreman?" And you will probably be surprised to learn that most all of them will tell you about the same things you yourself would say if the question had been put to you.

In fact, there are very few people who do not *know* what it takes for a man to merit promotion.

Now if some smart man will just come forward and explain to us why such a condition exists, he will be doing a great work for the benefit of this class of workers.

"Cut off your nose to spite your face," is an axiom that seems to fit pretty well the class of men referred to. Why in the world a man will do his work so that it really

30,000 Roving Bobbins Cleaned Every Working Day

Steadily as the clock ticks, roving bobbins are cleaned by the Termaco at a rate of 30,000 per day. Each bobbin is perfectly cleaned—better than human hands can do.

No Termaco cleaned bobbin is ever cut or splintered. The waste is carded off, not cut off, and is kept together where it cannot be blown about the mill. From start to finish, the reliable Termaco does its work surely, perfectly, tirelessly—and neatly.

Never late on the job and never too tired to do a full day's work, the Termaco gives uninterrupted service year after year. Ball bearings on all high speed shafting, all gears cut gears, heat treated steel parts used where necessary for long life, the very best material and workmanship used throughout; these are the reasons a mill can expect and will receive economical and faithful service from a Termaco that will establish an enviable record for endurance and low maintenance cost.

It is as easy for one employee to operate a Termaco as it is to drop bobbins in a basket. It cuts down to the minimum figure the cost of cleaning bobbins.

Each part is made in jigs and templates to afford rapid and perfect interchangeability of parts. It is a simple matter for anyone with slight mechanical knowledge to keep a Termaco in perfect operating condition.

The cost of operation is so small as to be almost a negligible item. The cost of the machine itself is soon absorbed by the big saving the Termaco effects in the cost of cleaning roving bobbins.

Our Engineering Department will promptly furnish you the details regarding what a Termaco will save for your particular mill. Write for this information today. You will find it of unusual interest.

TERMACO

Every machine trademarked "Termaco" is sold under a binding guarantee as to workmanship, material and opertion.

The Terrell Machine Co., Inc.

Engineering Department, Charlotte, N. C.

General Supply Co., Danielson, Conn., Representatives for N. Y. & N. E.
(Complete stock of parts at all times carried by northern representative.)

Uneven Laps

Cause uneven work. Slipping evener cone belts cause uneven laps. Friction in the apron and evener rolls makes the cone belt slip.

Ball bearings remove this friction and allow the cone belt to give the proper feed of cotton to the beater.

The installation is not expensive and is used on hundreds of lappers.

AldricH MachinE

Ball WorkS Bearings

Greenwood, S. C.

DETROIT

STAGGERED GRIP

BELT LACING

Remember you have to buy only one Detroit Belt Lacing Machine in a lifetime. If anything goes wrong it will be replaced free of charge.

Detroit Belt Lacer Co., Detroit, Mich.

makes his earning power less, why he will knock every foreman he has worked for, why he will knock and plot against the firm that is paying him honest money for every minute he works, a firm that is probably spending part of the money which should go to the stockholders in order to improve the conditions of this man, to give his children better schooling, doing all they can to induce him to save a part of his earnings and trying in every possible way to teach him how to earn more with the same amount of work, when this man knows at the time he could be a stockholder in the firm if he wanted to buy the stock, knowing that the firm would gladly promote him at the first opportunity if he would only turn about and do his work the way he would want you to work for him—well, the more we try to explain it the further away from the explanation we seem to get.

Is it any wonder then, that the head of a firm sometimes loses faith in human nature?

Every overseer knows men working for him who would make good second hands and then good overseers if he could only get them to see their futures in the right way and start in doing their work like they would do it if the mill belonged to them.

Remember, there are ten good jobs where there is one good man.

Don't you want one of them? Well, if you do, it is waiting for you if you will do your work as you know you should do it and be loyal to your firm.

> This article was not especially prepared for my brother overseers and superintendents, but that they might use the story or thought in conversation with their section men, or pass the magazine around from one section to the other for them to read, or better still, cut the article out and place it on the bulletin board for them to read.
>
> You will do much good by having your section men up at times to talk to them and you will receive many good ideas from them if you handle them in the right way to win their confidence.
>
> Sincerely yours,
>
> "Old-Timer."

Laying in Threads at the Slasher Comb.

EDITOR COTTON:

Please have some of your readers explain in the "How Other Men Manage" department the best way to figure how many ends to lay in a dent on a slasher comb. Say, the comb is a 7 dent or 350 dent, 50 inches long, and the set of section beams contains 1,456 ends to be run on a 29½-inch beam (between the heads) and the same number of ends run on a 42-inch beam. The thing I want to know is how to figure on any set with different numbers of ends and different width beams and different dent combs.

J. S. Y. (N. C.)

EDITOR COTTON:

Replying to the question of "J. S. Y. (N. C.)" regarding the laying in of yarn on slashers, I will say that a 350 raddle is all right to run any sets, white or colored, up to 2,100 ends, which at the most would be only six ends in a dent, and there is not much to be gained by trying to keep a striking comb for every odd set. If one has combs with the correct number of teeth, well and good, but the best slashing sheet of yarn is had by counting in at the front of the slasher. It takes a few minutes longer, but the quality and quantity of the weaving are improved.

There is no correct set rule for laying out work for slashers; different overseers have different ideas as to which is the best lay-out in a slasher raddle, even on the same construction, some men want a number of raddles from 250 dents up to 500 dents. In using the 350-dent raddle for 1,456 ends, I advise using 290 dents with five ends and one dent with six ends, a total of 291 dents. The contraction will work all right, but all the 350 dents could not be contracted to 29½ inches. On a 42-inch beam 1,456 ends, I would say use all of the 350 dents, which will only have to contract four inches on each end of the raddle. If "J. S. Y." has a 350-dent striker, I would suggest that he use it on this set—56 dents will contain 5 threads, all the others four ends—on the 29½-inch set count these in from the flat sheet at the front before putting in any of the splitting rods.

The important things to keep in mind are the width of the loom beam and the number of dents that can be used and still give some leeway as to expansion and contraction of raddle. I trust "J. S. Y." and other readers will understand the foregoing.

Mack (Ga.)

Notes on Combing.

EDITOR COTTON:

There has been very little written on combing in COTTON, possibly because a large part of the work in the South has been confined to coarse numbers, but in recent years there has been an increase in the amount of fine numbers spun, and consequently, since there are quite a few combers in the South now, possibly a few notes concerning combing would be helpful to some, as well as to deviate for a while from the discussion of fly frames which seems to hold the center of interest in the pages of COTTON at present. Fine numbers can be spun in the South as well as in the North, if not better, and I would like to see more articles in COTTON on combing, to stimulate our interest in this important process and help to develop it more nearly to a state of perfection. We can do this by getting the other fellow's point of view and by helping others, we help ourselves.

Before the cotton can be combed, it must be placed in a suitable form for the comber, and for this purpose a sliver-lap and a ribbon-lap machine are used. The object of the sliver-lap machine is to combine a number of slivers together into a narrow lap. The width of the lap may be 7½, 8¾, 10½, 12 or 12½ inches. If the lap made on the sliver-lap machine is to be run on the ribbon-lap machine, it is usually made an inch narrower than the finished lap required for the comber. The number of slivers run together on the sliver-lap machine varies from 14 to 18, there usually being two slivers to the inch of the width of the lap. The full lap should have smooth, firm ends and be from 12 to 16 inches in diameter. The weight of the lap per yard varies with the width and the cotton being used, an 8¾-inch lap may weigh from 250 to 320 grains per yard, other widths varying in proportion to the widths. The speed of the five-inch roll may be from 50 to 100 r. p. m., according to the production required, a good running speed being around 80 r. p. m. The principal setting points are the distance from center to center of the

Back of every productive mill you'll always find perfect cooling and heating

ATMOSPHERIC conditions play an important part in the efficiency and productiveness of every department of the mill. Back of every highly efficient mill you'll find perfect ventilation—perfect cooling in the summer and heating in the winter. And back of every perfect cooling and heating system you'll find the most perfect fans and blowers—BUCKEYE.

In the Buckeye equipped mill you won't find a hot, oppressive atmosphere in the summer that stifles the employee's efficiency and cuts your production—you won't find a cold, numbing condition in winter that keeps them full of cold. You won't find the dye house filled with vapor that is injurious alike to employee, product and building interior. You'll find the correct temperature maintained the year around—maintained by a system exactly suited to your particular requirements—a system using the famous

BUCKEYE FANS and BLOWERS

for Cooling—Ventilating—Heating

Our engineers are at your service. You will be under no obligation by writing us for any information you desire or asking that an engineer call and investigate your particular conditions and advise with you as to the best equipment or system for your mill—whether it be a system of cooling, heating, ventilating, exhausting, condensation and vapor elimination, conveying of raw stock, lint, etc., or the drying of cloth.

We are glad to serve you, whether you buy or not. Write us direct or write or wire our Southern office.

BUCKEYE BLOWER CO.

COLUMBUS, OHIO

Southern District Office, 372 Whitehall St., Atlanta, Ga.

324 Monadnock Block, Chicago, Ill. 1400 Broadway, New York
101 Wabash Bldg., Pittsburgh, Pa.

drawing rolls guides which regulate the width of the slivers as they pass through the rolls and from the rolls to the spools, and the setting of the lap racks and plates. For common rolls, using a medium weight sliver, the front and middle rolls may be set about ⅜ of an inch over the length of the staple, the middle and back rolls ½ to ⅝ of an inch over the length of the staple. Metallic rolls should be set ¼ inch wider than common rolls. The back guides should be set so that the sheet of cotton, as it passes from the five-inch roll, will be a little wider than the lap to be made, and the edges should be smooth and even. The front guides should be set so that the edges will be gradually turned in, making a smooth selvage on the lap. The lap racks should be set level and plumb and directly over the center between the two drums. The draft on the sliver-lap machine may be from 1.75 to 2.5.

After the cotton has been run through the sliver-lap machine, the laps are then run through the ribbon-lap machine, doubling from four to six. The drawing rolls are similar to the drawing rolls of a drawing frame and the same settings may be used. The usual widths of the lap on a ribbon-lap machine are 8¾, 10½ or 12 inches. The curved plates should be kept highly polished and clean. The speed of the five-inch presser roll may be from 70 to 100 r. p. m., and the speed of the front drawing roll may be from 250 to 350 r. p. m. The draft on a four-lap machine may be from 3 to 5, and on a six-lap machine from 5 to 7. The settings, with the exception of the drawing rolls, are the same as on the sliver lap machine. The ribbon-lap machine is not absolutely necessary and in many cases is not used because of the danger of making "singles." The thin sheets of cotton are very easily broken as they pass over the curved plates and since there is no stop motion for this, there is frequently a lot of trouble caused by these "singles." When the ribbon-lap machine is not used, generally one process of drawing is used after carding and two after combing.

The cotton is now ready for the comber. The objects of the comber are to remove the short fiber, small bunches, leaf, neps and other foreign matter which may have passed through the card, to straighten out the fibers and to lay them parallel. The width of the laps vary on different machines from 8¾ inches on the old style combers to 12 or 12½ on the new machines. The usual speeds of the old style comber are from 90 to 95 nips per minute; Nasmith, 95 to 105 nips per minute; Whitin ,95 to 105 nips per minute; Whitin high speed, 120 to 125 nips per minute; Tunstall, 94 to 100 nips per minute. The settings and timings of a comber should be governed by the length of the staple, the weight of the lap, the quality of the work required, and the amount of waste to be removed. The timings of a comber are regulated from the index gear which is on the cylinder shaft. The index or markings are obtained by dividing the number of teeth in the gear (which is 80) into 20 parts of four teeth each and numbering from 1 to 20.

The Heilman type comber is built practically alike by all makers, the only difference being in the method of operating the detaching roll, so the following timings and settings will serve:

Feed to commence	4 to 5
Top comb down	5
Nippers open	4.5
Detaching roll forward	6
Detaching roll to touch segment	6.75
Detaching roll to leave segment	9.25
Nippers close	9 to 9.5

The front edge of the fluted segment is set to a 1⅛ cushion gauge from the steel detaching roll at 5 on the index.

The settings are as follows:

Detaching roll from segment	21 gauge
Feed roll from detaching roll	1⅛ to 2 inches
Cushion plates from detaching roll	1⅛ to 1⅜ in.
Stop screws from nipper stands	¼ to ⅜ inch
Nipper knife from cylinder needles	19 to 21 gauge
Top comb needles from segment	19 to 21 gauge
Angle of top comb	25 to 35 deg.

Set the flutes or leather of knife to the top of the plate so as to hold a piece of writing paper tight. The front lip of the knife to the front of the plate to a double thickness of paper loose. Set the back set screws of the top comb to one thickness of paper from the comb arm when the top comb bowl is the thickness of an 18 gauge from the cam. Set the brass clearing roll to an 18 gauge from the leather detaching roll at 17 on the index. Set brushes to cylinder so that the ends of the bristles or fibers will touch the brass strips of the cylinder at about the fifth row from the front. Set doffer from brushes to an ordinary card gauge. Set comb from doffer ☆ inch at its closest point.

The percentage of waste taken out at the combers should be tested at least once a month and any found to vary more than one per cent from the standard should be changed. The following changes will affect the amount of waste made. To increase the amount:

Set top comb closer to the segment.

Set top comb at a greater angle.

Set nipper knife closer to the needles.

Set nipper plate and feed roll farther from delivery roll.

Feed later.

Nip later.

To decrease the amount of waste, make changes in the opposite way.

In changing the settings to change the amount of waste taken out, the object should be to take out the least possible amount of long fiber. Changing the angle of the top comb and setting the top comb and the nipper knife closer to the segment, or cylinder needles, will give the best results. In changing the time of feeding or nipping the amount of waste may be increased without increasing the quality of the work produced. The greatest change in the amount of waste taken out can be made in the setting of the top comb, nipper and feed roll.

To take the percentage of waste made on a comber, first see that all the laps are running straight and all the ends pieced up. Stop the machine and break the sliver close to the front calender rolls, and clean off the waste close to the doffer and comb. Place boards on the waste boxes, run the machine about 30 nips, take the waste and sliver made during this time, weight the sliver and waste separately, add the weights together and divide the weight of the waste, multiplied by 100, by the total weight. When using the ordinary percentage scale the waste should be put in the right-hand basket and the sliver in the left-hand basket.

The machines should be brushed down and the floor swept four times a day. The machines and room will be

YOU are beginning to think and possibly worry about your Inventory.

Will it be finished on time? Will it be absolutely correct? Will it be done at the least possible expense?

Are you familiar with the Monroe Method of figuring Inventories? Do you know how the Monroe Visible Check, Monroe Proven Answers and Monroe Decimal Accuracy can safeguard the work and remove the worry and fatigue?

The Monroe handles with equal ease fractional gross, fractional dozens, fractional yardage, discounts and all other calculations peculiar to inventory. All fear of decimal errors is eliminated.

The Monroe man will be pleased to loan you a machine NOW and teach your staff the many uses to which a Monroe can be put on inventory figuring. Then when the big job of inventory arrives your staff will be able to use the machine to the best advantage.

We invite you to arrange NOW for a trial before inventory time by consulting your telephone directory or addressing:

The 20-Place Standard Model

MONROE

REG. TRADE MARK

Calculating Machine Company

WOOLWORTH BUILDING NEW YORK CITY

There is a Monroe to fit your needs in the Automatic Models (electrically-operated), Standard Models, Fraction Models, British Currency Models, etc.

Monroe Service is Available at all Principal Points in the U. S. and Canada and Throughout the World

kept in much better condition if the machines are equipped with Roth aspirators. The tops should be dusted down with a finger brush once a day, and the machines wiped over on Wednesday and thoroughly cleaned on Saturday. Drawing rolls and coilers should be cleaned once in two weeks, and half-lap needles looked over and picked once each week. Brushes should be cleaned once in four weeks; the top combs wiped with hard waste twice a day on old type combers and four times a day on the new high production machines; comber tops set about every four months; combers thoroughly cleaned and re-set once a year; brushes re-set about every four months; detaching rolls varnished every week, and draw-box roll varnished every three months. Once a week the top combs should be looked over and any bent needles straightened, and if any needles are broken out the combs should be changed. The clearers over the draw-box rolls and detaching rolls should be picked often enough to keep them clean. When cleaning the detaching roll clearers, they should be held over the alley clear of the comber table so that the dirt will not fall on the slivers. In brushing down a machine, always brush towards the back of the machine so that the loose cotton or flyings will not drop on the table. The cylinder brushes should be cleaned often enough to keep them from filling up. They may be cleaned with a coarse hand card or an iron rake. While the brushes are being cleaned, either the feed roll should be thrown out of gear, or the end should be broken down at the coiler and the sliver made while cleaning the brushes run into a waste can. In cleaning the brushes, commence at the gearing end of the machine, finishing at the coiler end. The cylinder needles should be picked and any bent ones straightened once a week. A picker to clean the needles can be made by soldering a few needles on a piece of iron.

Head ends and all fast motions of combers should be oiled once a day, tops and all slow motions once a week; draw-box rolls, if solid, once a day, if shell, once in two weeks; detaching rolls twice a week. Cleaning and oiling of combers are very important parts of the work. In oiling, care should be taken to properly lubricate the running parts without having the oil run over the outside of the bearings.

There has recently been considerable discussion as to what the comber does to the cotton fibers as they pass through the machine. It has generally been considered heretofore by textile men that considerable of the short fiber is removed, but this has been denied recently by high authority. The following tests that were recently made show that the comber does do what has always been claimed for it. These tests show the percentage of waste taken out, using different stock, different settings, and under different conditions. The first test was made to show that the comber does remove the short fibers. In making this test a good even running cotton, 1½-inch staple, was used, and a certain amount of colored short fiber added. The short fiber was mixed at the lap machine before going to the comber. The colored stock was prepared by running a light lap on the picker, unrolling it and folding it so as to make a strip eight inches wide. This was fed at the back of the card, which was geared to make a 25-grain sliver. The trumpet was removed from the front calender rolls and the web run through the width of the rolls, making a thin ribbon about six inches wide weighing 25 grains per yard. This ribbon of colored stock was fed in between two laps on the lap machine or laid on the top of the two laps. In making the lap for the comber, two laps weighing 250 grains per yard were doubled together and either one or two thicknesses of the colored stock run in between them or laid on them at regular intervals, running about 1½ yards of white stock, then 1½ yards with the colored stock mixed in. With one thickness of colored stock there was about 4.75 per cent; with two thicknesses, 9 per cent. This lap was then run in the Nasmith comber, using the regular settings with the nipper set 8/32 of an inch from the detaching roll. The top comb was set as close to the leather detaching roll as possible without touching, with the points of the needles $\frac{1}{8}$ of an inch from the steel detaching roll. The feed ratchet was set to take five teeth.

The results of Test No. 1 were as follows:

Average percent of waste when running all white.... 7.78
Average per cent of waste with 9% colored between laps 14.8
Average per cent of waste with 9% colored laid on top 15.4

This showed an increase of 7.02 per cent waste with the colored stock between the white, and 7.62 per cent with the colored laid on top.

In Test No. 2, the nippers were changed to 13/32 of an inch and all other settings made the same as in Test No. 1, with the following results:

Average per cent of waste when running all white ..12.3
Average per cent of waste with 9% colored between laps 18.98
Average per cent of waste with 9% colored on top...19.5
Average per cent of waste with 4.75% colored between laps 15.7
Average per cent of waste with 4.75% colored on top 16.5

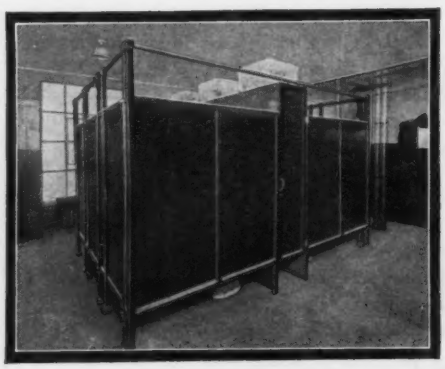
This shows an increase of 6.68 per cent, with 9 per cent colored between; 7.2 per cent with 9 per cent colored on top; 3.4 per cent with 4.75 colored between; and 4.2 per cent with 4.75 per cent colored laid on top. These tests showed that the percentage of waste was increased in each case by the addition of short stock to the lap. In changing from white to mixed the change could easily be seen, the sliver at the front showing a slight bluish cast and the waste changing from white to blue and being much thicker while the colored stock was running through. The color showed in a straight line across the waste as soon as the colored stock passed to the cylinder needles.

Test No. 3 was made for strength of yarn with nippers set close, taking out a low percentage of waste, and set wide, taking out a high percentage, with the following results:

		Count	Break
Nipper set at 8/32 in., average per cent, 9.36		59.38	34.7
Nipper set at 14/32 in., avg. per cent, 17.9		60.37	37.1

The comparative break for the close setting would have been 33.89; that is, if the 59.38s had sized 60.37s the same as the wide setting, the break should have been 33.89 instead of 34.7, showing an increase in the breaking strength of the wide setting over the close setting of 3.21 pounds or about 9 per cent.

Test No. 4 was made with different humidity conditions, first, running with the air dry, then changing to moist, with the following results:



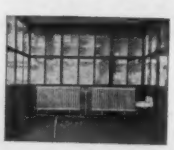
Sanymetal Toilet Partitions in the B. & O. Railroad Warehouse, Philadelphia, Pa.

The Fact is, Sanymetal Does Last Longer

YOU would naturally expect—judging from the widespread preference accorded Sanymetal Toilet Partitions—that the product must have exceptional merit. And, in fact, a close analysis shows that it has. Apart from the splendid sanitary qualities actually built into it, Sanymetal is known as a partition which substantially outlasts the average metal toilet compartment. Yet it is priced no higher than any other good partition.

Designed for toilets, urinals, showers, dressing rooms and toilet wainscot. Standard units adaptable to any layout. Made always of Armco Ingot Iron. Water-shedding construction. Doors equipped with Sanymetal Gravity Roller Hinges. Write today for our new Catalog No. 5.

Catalog 4 shows Office and Mill Partitions.



THE SANYMETAL PRODUCTS CO.
986 E. 64th Street Cleveland, Ohio

Sanymetal
TRADE MARK U.S.REG.
Toilet and Office Partitions

Creo-pine Sub-Flooring

Specified!

by leading Construction Engineers

One of the leading construction engineers in the country in specifying the sub-flooring for a huge cotton mill, insisted that it come up to the standard of Creo-pine Sub-Flooring—produced by the Southern Wood Preserving Company.

Engineers are generally recognizing the fact that Creo-pine is the **standard** sub-flooring. Many mill owners are insisting upon it in new construction programs.

Write for full details today.

Southern Wood Preserving Co.
Creosoting and Creo-pine Products
ATLANTA, GA.

Temperature	Relative	Actual	Average Pct.
71	47	3.9	11.3
73	64.7	5.7	10.7

This shows a slight increase when running with dry conditions.

Test No. 5 was made using a different number of processes of drawing before combing, using one, two and three processes between the card and the sliver lap machines, with the following results:

One process of drawing, average per cent.....13.7
Two processes of drawing, average per cent 10.44
Three processes of drawing, average per cent 9.58

This shows a difference of 3.26 per cent between one and two processes and .86 per cent between two and three processes. With two processes of drawing the lap ran off well on the comber; with three processes the lap licked considerably.

A good many more of these tests were made, and if anyone is interested and would like to see them published, I will be glad to send them in to COTTON. Meantime, let's hear from some other fellows who operate combers.

N. B. M. (Va.)

Answers Finishing Questions.

EDITOR COTTON:

I send you herewith samples of sulphur dyed sateen, and also a sample of 7.00-yard sheeting dyed with direct colors, to be dyed and starched on padder. I will greatly appreciate some information through "How Other Men Manage" as to formulas for finishing these goods, and also the machinery required to handle this class of goods.

C. K. (Wis.)

EDITOR COTTON:

Replying to the query of "C. K. (Wis.)" in regard to the finish of a dyed sateen and a seven-yard sheeting (interlining) of each of which he sends samples, that were submitted to me; I also note that he asks for formulas for finishing them and the machinery required to handle this class of goods.

With regard to the sateen sample: The goods must first be thoroughly singed, preferably twice on the face and once on the back. A gas singeing machine which can be built to singe both sides at once will serve very well for this. The goods must then be steeped and thoroughly bleached receiving two boils—first in 60 parts caustic soda and 40 parts soda ash—second, in soda ash alone with a little soap. After bleaching the goods are dyed and dried up. They are then mangled through cold water on a heavy set five-bowl mangle and dried and made up. This is the way the sample enclosed has probably been finished. In some cases, however, the addition of Epsom salts to the mangling water may be made. This water may be made to stand at anything from 2 to 20 degrees Twaddle. It makes the goods fuller and of course heavier. If it makes the cloth too stiff they will have to lie, after drying, until cold, then sprinkled on the dampening machine and then lightly calendered over an expanding stretcher through a wooden bowled calender with cloth lapping on the bowls.

If the sateen is for a glossy finish it is mangled (after dyeing) through cold water on a five-bowled water mangle and dried up, then sprinkle on damping machine when cool, then chase two or three times on five-bowl calender, hot press between glazed cards in the hydraulic press and make up. Some goods are only lightly calendered, one nip (cold) only being given. In some cases the goods are starched on the back with: 10 pounds corn starch, four pounds lard, four pounds glucose, 10 gallons water. Boil under pressure 20 minutes or without pressure for one hour, stirring all the time with a mechanical stirrer; cool to 40 degrees C. before using. After starching, dry the goods up and cool off, sprinkle if necessary and make up. No calendering to this unless the goods are too stiff, then they may require breaking down over a revolving stretcher and wooden-bowled calender.

With regard to the seven-yard interlining, the goods are better if steeped and boiled out once before finishing, but they can be run direct from the bale without any preparation at all; in either case the goods must be entered dry into the liquor of the padder. In sizing the cloth passes through the size in the size box (padder) and directly onto the drying cans. The sizing substances are usually glue, gum and starch of varying proportions and the coloring matter necessary to dye the goods.

The following is a mixture that would probably suit the purpose: 120 to 150 gallons water and the color desired; 10 pounds tallow or wax; 224 pounds corn starch; 3 pints caustic soda at 70 degrees Twaddle. Boil for one hour constantly stirring, then add 20 pounds of glue previously steeped overnight and dissolved in hot water. Stir well before using. Do not boil the glue. If glue flour is used it can be added, without previously steeping, to the boiled starch but it must be stirred a long time to thoroughly dissolve it before using. W. B. (Maine)

Are Drop Wires Positive?

EDITOR COTTON:

For years I have made the claim that the fly frame is the most imperfect machine in a cotton mill—and I give good reasons and proofs for my conviction. A very close friend of mine, the agent of a large cotton manufacturing plant in Massachusetts, has the same opinion of drop wires that I have of the fly frame. His claim is that they are not positive. You couldn't talk warp stop motion to him; but he is wrong and I told him so.

Now, why are they not positive? My answer is because the drop wires are not polished as they should be, and I am going to prove it. Let anyone interested in this subject watch at the back of any loom equipped with the warp stop motion, and he will see that when an end breaks in the case of highly polished drop wires, the wires will drop instantly, thus making the stop motion positive. On the other hand, when an end breaks in the case of drop wires having a rough surface, the rough edge will cling to the broken end and fail to drop. The broken end quickly gets tangled with other warp ends and a mess results before it is discovered by the weaver.

But why blame this wonderful invention? Why not put the blame where it justly belongs? Rough drop wires will chafe some of the yarn, but in most mills where a low grade of cloth is made they get by with a little extra labor. However, my only object in writing this letter is to prove that stop motions for warp threads are positive when the drop wires are highly polished. Wash (R. I.)

Bondaron
TEXTILE LEATHERS

Bond Leathers Give Longest Service

There is one best way to judge textile leathers—by their records. We have records from well known mills throughout the country showing the remarkable endurance of BONDARON products.

Check Straps, Lug Straps, Picker Straps, Harness Straps, Round and Flat Belting and other textile specialties made from this tannage last often three to five times longer than ordinary leathers working under the same conditions.

In the secret process by which BONDARON is tanned the strength of every fibre is preserved and developed. No pains are spared to make it the most serviceable textile leather in the world.

Besides the great tensile strength and resistance to wear, Bondaron has unusual flexibility, and when made into belting for difficult drives gives most excellent service, delivering full power with practically no stretch.

We can furnish all leathers for use in the textile industries. Send us your orders.

Manufactured exclusively by

CHARLES Bond COMPANY
Leather Importers, Curriers and Belt Manufacturers
617-619 Arch St. Philadelphia, Pa.
THE.LEATHER.WITH.THE.HAIR.ON
ORIGINAL AND GENUINE — BONDARON

DIXON'S Silica-Graphite Paint

Recommended For
Smokestacks, Water Tanks, Bridges, Standpipes, Boiler and Engine Room Equipment and all other exposed metal or wood work.

Lower Paint Costs

by using a paint that will withstand wear and corrosion for a longer time than if a "cheaper per gallon" paint were used.

Dixon's Silica-Graphite Paint has for many years afforded better protection and complete satisfaction to its many users. Records in various fields tell of service of from five to ten years without repainting.

Such records are possible only because of the lasting quality of the pigment, flake silica-grapite, and the vehicle, boiled linseed oil.

It will pay you to write now for Booklet No. 34-B, which tells why Dixon's is a better paint.

Joseph Dixon Crucible Co.
Jersey City, N. J.

D X N Est. 1827 D X N

50% Better than ever from YOUR Standpoint

SEVERAL NEW FEATURES

have been added to the "1912" Cloth Cutting, Folding and Winding Machine which **add at least 50 per cent to its value to YOU.**

It will cut your cloth—fold the edges—roll it up and give you an exact measurement of every piece of cloth going through the machine.

It saves time, labor, machines and cloth.

YOU ONLY NEED ONE MACHINE where before it required two and you get an extra strip from each bolt of cloth.

It cuts the corners of expenses in every way and leads to more and greater profits.

THE ENORMOUS SAVING WILL INTEREST YOU.

Mail a card for complete information and prices.

When in need of special machinery, write us.

J. A. FIRSCHING, 614 Broad St., Utica, N. Y., U. S. A., Dept. "C."

Bradley Stencil Machine

The Bradley Stencil Machine makes Stencils in half a minute at reduced cost of 1-10c each. Write for catalogue and price list.

In universal use by thousands of manufacturers and shippers.

Oil Paper, Stencil Paper and Inks. Bradley Ball Stencil Pot uses Liquid Ink for marking and stenciling. Price 60c or $6.00 per doz. Manufacturers of Oil Stencil Papers.

Write for Prices and Samples

A. J. BRADLEY MFG. CO.

99 Beekman Street NEW YORK

Suggests Using Spools on Slubbers.

EDITOR COTTON:

In these days of trying to increase the efficiency of a cotton mill to the highest point, why is it that we cannot use a spool on a slubber rather than the ordinary bobbin thus doing away with the necessity of a taper? It is easy to see that the increased yardage will be a distinct advantage in the process where the spool is used, as well as in the following process. The mechanical part of this problem is simple, as all it means would be to eliminate the builder. The objection to spools that they would break easily will not stand in these days of the non-breakable spools. I am wondering if any of your readers have tried out spools, and, if so, what luck they had.

P. R. O. B. (N. H.)

Where the Roving Stretches.

EDITOR COTTON:

In the August issue of COTTON, "Wash (R. I.)" refers to my article on stretched roving that was published in the May number. He says that I discovered an evil caused by the bobbin-lead system and did not know it.

"Wash" is wrong, for I was speaking altogether of roving after leaving the fly frame. We all admit that more or less roving is stretched on fly frames—both the bobbin-lead and the flyer-lead. I am not an advocate of the flyer-lead frame, for it is a thing of the past.

"Wash" again brings up the bobbin-lead frame in his article on the cone belt. That is, when the frame is run slow the ends get tight and when it runs fast the ends get slacker. "Wash" is dead right when he says that the presser paddle has the greatest pressure on it when the frame is at a high speed, and a low pressure at a low speed. But "Wash" forgot to mention that when a frame is run at a high speed the roving passing through the flyer has a greater balloon and less drag on the flyer, and when running slow it has less balloon and more drag on the flyer. The less pressure on the paddle and more drag on the flyer is what causes the end to break at the presser when the frame runs slow.

We must bear in mind that all roving breaking at the presser is already stretched before it gets to the flyer. The roving is stretched just after it leaves the fluted roll and before the twist gets in it. The reason the roving doesn't break at the time it is stretched is that when the roving stretches it releases the tension and the twist goes into it and it passes on to the presser, where the greatest friction is, and then breaks.

C. S. (Ga.)

Some More on Balanced Twist.

EDITOR COTTON:

My answer to "M. L.'s" query on balanced twist was completed with the publication of my last letter which appeared in the August issue. This discussion was continued by "J. J. B." in his letter in the same issue. I was expecting the criticism of the readers when I left out the latter part of my first letter. I am still inclined to believe many other readers are of "J. J. B.'s" opinion, but they did not find time to write and tell us.

Most people are not accustomed to think or deal with yarn problems from the angle of yarn standpoint. I dare say that, notwithstanding the fact that they have all the experience of a life spent in the mill, most of them have overlooked this question of the angle of the yarn.

The reason why the angle of yarn is so important to yarn problems is that it is the only natural, common unit to deal with the count of the yarn. It is hoped that with the help of the studies made by Prof. G. B. Haven on the question of regain, we will soon be in a position to work out some simple formulas taking in all the factors that affect the strength, the kink, and the diameter of yarns, such as the nature of the fibers, the moisture content, the weight of the traveler or tension, and the twists, etc. I wish here to announce that the formulas given in the August issue deal only with the question of twist from the angle of yarn viewpoint, not considering the other factors.

Just to show that the formulas given are conclusive and applicable, let us turn back to the letter of "J. J. B." The first example he gives is 15s warp with 18 turns per inch and the ply yarn is 7½ turns per inch. A glance will show this is nothing but B1 or Y1, as shown in the formulas on page 855 of the August issue.

For B1:

$$\text{Formula } T = \frac{t}{2} - X$$

Here $T = 7\frac{1}{2}$ turns per inch

$t = 18$ turns per inch

$$\text{So } 7\frac{1}{2} = \frac{18}{2} - X$$

$$\text{Thus } X = 9 - 7\frac{1}{2} \text{ or } 1\frac{1}{2}$$

For Y1:

Formula $D < S$

$D = 2.5$ twist multiplier for the ply yarn (used)

$$S = \frac{18}{\sqrt{15}} = 4.65 \text{ T. M. for the single yarn (used)}$$

Of course 4.65 is larger than 2.5, which agrees with the formula.

The last one is in the case of Y3, for all the ply yarn multipliers are larger than the twist multiplier of the single yarn. So the only case that he did not give us is the second case of the Y-system.

I am interested to know what breaking strength "J. J. B." is getting from the 15s/2 he mentioned.

H. H. Y. (Mass.)

The Employment Manager.

EDITOR COTTON:

The employment department, although a comparatively new division of the modern industrial organization, has caused greater improvements in the manufacturing industry than any other separate division, having credited to it more remarkable achievements than to any other, consider the number of years which has passed since the first department was established.

The energy and money which have been expended upon materials and machinery to obtain the best results are bewildering. Firms seldom spare expense in solving these problems. During this frequently extensive search for material and machinery, the most valuable factor of all—the

Increased Production

The treasurer of a representative Southern mill says: "Some time ago we attached Root Pick counters to our looms, which we believe has a remarkable effect upon our weavers. They now run the looms during the noon hour, and sometimes turn them up before starting time, and keep them running after quitting time. This is the principal cause of our increased production."

Better Production

The weaver knows that an occasional kick will not give him a cent's worth more in tonnage. In this way a more uniform and standard piece of cloth is made, so there is no incentive to kick the pick which causes thin places. This permits you to positively guarantee the uniform quality of your cloth, and that alone is worth the price of the counter.

Exclusive Advantage

The advantage over "cut mark" or "yardage" method of paying with its uncertainty of guessing and estimating is entirely eliminated when you pay by the pick. The counter has recorded all picks woven and the weaver can be paid any time without loss to himself or to the company. It settles disputes which arise over pay as the weaver can check his week's wages at any time.

Promote Harmony and Satisfaction

Payment by the pick rewards the workman for the actual amount woven—weavers leaving you can be paid off immediately—accurately—no argument between the crews of day and night shifts is possible.

In each of the above there is a decided extra benefit in permanent harmony and satisfaction among your weavers—it is showing them square treatment.

The Census Takers of the Textile Industry

Incentive to the Weaver

By being able to check his week's wages and knowing what it is at any time, the weaver becomes more interested in his work knowing that he is being paid more for increasing his individual production. And again, no weaver wants to be classed as the poorest workman, so he will exert himself to the utmost in order not to be shown up by his fellow weaver—for payment by pick the Root counter way places them all on a strictly competitive basis.

A NECESSITY TO QUALITY PRODUCTION

ROOT COUNTERS —in the Textile Mill

ELIMINATES ALL CHANCE OF KICK

Efficiency and Economy in the Textile Industry, as in every industry, depends upon modern Equipment. But why limit that equipment? No present day business would consider doing away with the adding machine. Remember the adding machine starts where the Root Automatic Pick and Hank Counters stop—why not use accuracy from the beginning? To count correctly raw materials and Individual loom Production and Individual output of each weaver, is the only method by which production costs can be attained from start to finish.

Our Engineers have successfully overcome the obstacle of vibration which heretofore has caused so many otherwise good counters to fail. Direct connection to the moving part of the loom had short life, likewise the flexible shaft, so after much research work they hit upon a plan of attaching a counter to the loom frame and drawing it by worm and gear from a cam shaft through two universal joints and a connecting rod, which has proven to be the most dependable possible way. See illustration below.

THE EYES OF PRODUCTION

KEEPS THE WEAVER AT HIS BEST

AN INFALLIBLE RECORD KEEPER THAT DRAWS NO PAY

The ROOT Co.

BRISTOL, CONN.

Southern Office:
14 1-2 S. Church St.
Charlotte, N. C.

human element—has been disregarded. The human element until recently has been considered a minor one.

Only a few years ago the man who hired employees was not allowed to attend meetings of the organization. These conferences of the responsible members of a corporation are vital to the company's welfare. It was important that the man who did the employing should attend them. At the meeting he could have placed before the executive a fund of knowledge which was vitally needed to bring the organization up to the recognized standard of efficiency.

It has been rightly, if ironically, stated that if cumbersome methods and inefficiency were profitable, nearly 90 per cent of our failures in the manufacturing field would be, instead, huge successes. This statement can be proved by carefully checking the failures and successes of today. Under the former rule-of-thumb regime, no standard of checking waste had been set in any department, even in the old established departments.

Employers acted with more consideration when they discontinued choosing needed employees from the crowd at the gate. Under the former method of hiring, no applicant was considered unless there was actually a place for him. No record was kept of prospective employees unless they were friends of other employees or of the boss. In a case of this sort the employee or the boss watched for an opening. All concerns trusted to luck to obtain their employees at the gate when they were needed, instead of referring to a carefully made up prospective list; a process common in the modern employment department. The first man to come was first considered.

Little attention was ever given to the man-power of organizations. Scores of our organizations have considered it a factor easily directed and fully controlled. It appeared as though the modernized executive believed the human element unequal to the task of considering conditions and circumstances for himself. They unthinkably and from outward expression both mentally and physically believed their employees fully contented. Heads of our largest organizations did not consider the fact that each and every man could do some task better than any other.

No corporation or even an employer of a few men undertook to concentrate their employment problems until a few years ago. These firms labored most inefficiently before they realized the bigness of the task which they faced. They learned that to deal successfully with these problems they must arm themselves with modern weapons. These only would be equal to the task.

It was not until the cost department began its investigations, relative to the expense of adding a new employee and the cost of dropping one from their payroll, that the real value of this new department was realized. This item, which added from forty to two hundred and twenty dollars to their expense, proved a big inducement toward the establishment of the new department. These investigations proved the rule-of-thumb method of engaging employees, the assigning of and the discharge of these employees, a peremptory and unnecessary waste of capital.

Executives of leading organizations were slow at first to assign duties of hiring, promoting, welfare, education and discharge to a special department. Nearly all considered it a costly experiment; yet watched eagerly the progress of the progressive executive, ready to follow as soon as his results proved satisfactory.

They promptly decided these duties were not child's play; but a task demanding an executive of special and concentrated ability. This man would be called upon to render a most valuable service for them. Therefore he should have prepared himself, by careful and detailed investigation of all problems pertaining to employees and their welfare.

A private interview with an employee has often saved a valuable worker for some other task than the one he was working upon. This is a common occurrence. However, this loss of energy is being overcome by the shrewd employment supervisor of the present day.

The element which has been most instrumental in establishing the employment department was the desire to know how many employees were upon the payroll. Many firms organized this new department that they might know how many were hired. Others started their department to know how many were discharged, transferred and handled. From these figures they learned the number who were not used and the number who presented themselves for employment. They then understood the real value that such a department would be to them.

When unbelievable results were obtained, they gradually added other duties to the department, such as interviewing, hiring and transfers. These were followed by discipline, welfare and other tasks.

No successful system can be worked out by those who have not made a special study of the conditions. The conditions in every case are different and they must be handled accordingly. The solution which would be the best in one case will prove worthless in another; because of the conditions. Some of the best features of efficient employment departments are outlined in the following paragraphs:

Business managers have found the prospective list which originates in the employment department to be a most valuable asset. This can be added to by keeping in close communication with schools and colleges. Technical training institutions of all kinds are valuable in this respect. From these sources much valuable new life comes.

The employment department, because of the valuable service it has rendered, is often considered the most vital of the entire organization. This is quite right. Here the task of selecting men, who will carry out the plans of the organization, are picked out. Why then put men at the head of it who have not adequately prepared themselves for their task?

An employment department can reach perfection only when the entire force and the elements work in harmony. No department can expect to attain success when the various functions pull in opposite directions. They must pull toward the same ultimate goal to produce the results which can be obtained.

It is the one main duty of the employment department to show the employees where they will be amply repaid for their efforts. This can be done in various ways yet the two most important and effective are promotions and raises in wages.

The employment department is called upon to render one of their most valuable services when they eliminate forced cooperation. This type of cooperation produces the greatest inefficiency of any element in the industrial world. Under this type they are continually looking for

another job. They feel their work is not appreciated.

Methods of procedure have been adopted which enable the new division to move along in almost a standard routine. As time passed these standards will be improved and changed in such a way as to make them more effective.

The employment department has shown and proved to employers the fact that the employee is the employer's greatest source of profit.

Considering the age of the employment department, no standard for judging the employment manager can be had, although the principal ones I shall mention.

He must be of a very sympathetic nature, although he must have the sense of right and wrong, combined with justice and a fair deal. He must, of necessity, be a good judge of human nature. He must understand production factors and know the requirements of each task. This is a valuable part of his working equipment. He must know what can be expected of men, both mentally and physically. He must be determined and never turn back on a plan once he has proved it to be the proper one. He must possess up-to-date knowledge of the prevailing wages.

He should establish some standard to gauge wages by. He should be systematically educated in organization and efficiency. These are valuable subjects for him to become conversant with. He should understand from experience if possible every task for which he hires.

He should be familiar with industrial law, or at least know where to obtain the law in its accurate form. Knowledge of psychology obtained from studied recognized authors and proof by experimenting are most helpful if not necessary. Factory management, although last, is not least in the employment manager's prerequisites.

His education could profitably be obtained in college. This should be combined with actual experience. The practical knowledge is the more essential, even though college education be sacrificed. He must know himself, be sensitive to waste, and fair in his dealings. This man must be inspiring and possess an unlimited amount of energy to do things.

The election of the employment supervisor is the most important task in the manufacturing field. It requires one who has made a special study of this field as they would in other fields which are open.

H. H. H. (Ga.)

Another Opinion on Slashing Questions.

EDITOR COTTON:

In this letter I want to reply to the questionnaire on slashing, weaving and twisting, prepared by the Textile Operating Executives, and published on page 938 of your September number. I appreciate that replies to a number of the questions are dependent upon local conditions; and I give my ideas with a view to beginning a more thorough discussion of some of the subjects among men whose goods relate closely to mine.

The percentage of size best for good running weaving is between 6½ and 7½ per cent, depending upon the size and character of the yarn.

A ball bearing yarn-driven slasher is better than the positive driven slasher, due to the fact that the calender or take-up rolls sometimes run faster, due to excess wrapping, than the cylinder, which causes a stretch between the calender rolls and cylinder. This stretch will be much greater than the stretch of a yarn-driven ball bearing slasher.

Thin boiling starch is better than thick boiling starch, due to the fact that it penetrates the yarn better.

Starch should be cooked at a boiling temperature from ¾ to one hour before using.

A close weave, heavy wool blanket is better for medium weight yarn than an open weave, light wool blanket, using about a 16-ounce on the back roll and a 12-ounce on the front roll.

Slashers should be run at high speed with additional steam pressure to get the percentage for added weight.

The temperature of 205 should be kept in the storage tank with a temperature of 198 in the size box. This can easily be controlled by the circulating system.

The next question asks about size congealing in the storage tank. Size should not be kept in the storage tank long enough for it to congeal.

A lease roller between the size box and the first cylinder is sometimes used advantageously when running coarse yarn with a large number of ends.

A conservative number of yards to be left on a warp beam when the slasher runs out is between eight and ten yards to the beam. A conservative percentage of hard waste is about .4 per cent.

When slack threads appear on the beams behind the slasher nothing can be done that will benefit this to any extent except, possibly, to apply all the friction to the head of the beam, or that side with the slack selvage. These slack ends are generally caused by mixed or heavy yarn.

To get the best results from the starch, starch and water should be agitated in the tank and boiled for a few minutes before compound is added. This gives a smoother starch with fewer lumps.

Slasher cylinders should be greased with tallow, and cleaned thoroughly to prevent rust spots.

It is better to have separate traps for each slasher than to have all slashers run into the same trap.

Recording thermometers on kettles and storage tanks are a decided advantage in sizing.

With regard to the weaving questions, I will answer only some of these. The best method of paying weavers is by the pick, but as yet, in my opinion, no satisfactory pick counter has been designed. The pick counters that are now on the market will, I believe, soon wear, due to vibration. The next best method of paying weavers is by the cut or yard, getting at the number of cuts by weighing each roll and dividing by a certain standard weight cut.

It is a good rule to make a standard for loom fixers to work by, this standard being set by the second hand or overseer, who should be good loom fixers.

A high sand roll and a higher whip roll both work to advantage in eliminating reedy cloth, though the setting of the harness and vibrating cams have a large part to play.

The best speeds for different width looms on plain bag sheetings are as follows: 30 to 32-inch, 178; 38-inch, 165; 40-inch, 156; 54-inch, 138; 60-inch, 133; 64-inch, 130.

The cause of most seconds on looms having the single bank stop motions is threads out, and on looms with single filling forks is thin places.

The system used by weavers taking off cloth at the

BRUNZOL TERPOLIN

(A CONCENTRATED LIQUID SOAP)

-SAVES TIME
-SAVES SOAP

Time-saving and material-saving are problems every textile man is constantly striving to conquer.

That is why Brunzol Terpolin is being set to work in additional mills every day.

Use it as you would ordinary soaps in the boil-off of worsted, woolens and silks. The solvents it contains penetrate the fibres more intensely than soap and with less expense and time. Use it alone or with soap or caustic when scouring cottons and with soap when scouring woolens and worsteds. In the boiling off of hosiery the goods are left cleaner and better for dyeing than when soap alone is used.

You'll find Brunzol Terpolin right on the job in kier boiling, too. With soap or caustic—in open or pressure kiers—it lops off at least 25% of the usual time and steam.

If you are interested in saving send for descriptive circular

THE NEW BRUNSWICK CHEMICAL COMPANY

REPRESENTATIVES AT BOSTON - PROVIDENCE - CHATTANOOGA - ATLANTA NEWARK, N.J.

R&H CHEMICALS

41st Year

The Consumer Knows

—accordingly they are the standard for comparison

Harnessing Chemical Resources to the Wheels of Industry

For many years it has been the privilege of R & H to convert the mighty chemical resources of nature to the varied needs of the textile industry.

A thorough appreciation of the problems to be met in the textile field has resulted in the scientific application of this knowledge to the production of R & H Chemicals—the standard specification among textile men.

The co-operation of a technically trained organization is at your command in the application of R & H Chemicals.

Send for the R & H Price List—a Buyer's Guide

Each month we issue a partial list of the R & H products, containing price changes and authoritative comment on special market features. It lists many chemicals used in the textile processes and is used by thousands as a guide in the purchasing of materials. Send for it on your firm's stationery.

Sodium Sulphide
Sodium Bisulphite
Glauber's Salt
Formaldehyde
Zinc Dust

The ROESSLER & HASSLACHER CHEMICAL CO.

709 Sixth Avenue, New York

cut mark is as follows: The cloth is taken off once a week at the cut mark. Weavers, when seeing the cut mark coming up over beam, flag the loom by means of empty quills set up against hopper stand, so as not to let the cut mark get by. When the cut mark passes over the sand roll and onto the cloth roll about three or four yards, the cloth is then rolled back to the cut mark and taken off.

The best system for taking care of double threads is not to let them appear in the warp. This can be done by good warping and good slashing.

Brakes are adjusted only on the looms that have cork insert brakes with a stop motion that can be easily adjusted.

The most satisfactory let-off motion for weaving a medium-weight goods is a positive compensating let-off.

The best filling is made with traverse going up slow and down fast. This is due to the fact that yarn is less liable to rope off.

Answering the questions on twisting, the best method to use in avoiding making corkscrew yarn on twisters is by laying up 2, 3 or 4 threads on the spool before twisting.

The speed of the traverse on twisters should be increased when changing from two-ply to six-ply in order to lay the yarn on the twister spool more evenly and smoothly.

The largest ring that two, three and four-ply coarse yarns can be successfully run on is about 4½ to 5 inches.

The best ring is the vertical ring with bronze traveler. The best traveler to use on a vertical ring is the bronze traveler.

The correct spindle speed for a 5-inch ring twister is between 4,000 and 4,500 r. p. m. This frame could probably be run faster with individual motor than with belt drive, due to the fact that the motor-driven frame would run at a more constant speed. Contributor No. 39.

Some Bleaching Troubles.

EDITOR COTTON:

We are having trouble with the bleaching of our heavy goods for dyeing such as ramie, sheeting, drills, ducks, etc. They turn out all cloudy and streaky, and though we have tried all manner of different methods of dyeing, the cloudiness and streaks still continue to bother us. We bleached them by the caustic soda boil and not the lime. After singeing they were steeped overnight, and then run into a three-ton kier, and boiled for 10 to 12 hours at 15 pounds pressure with 150 pounds caustic soda and 80 pounds of soda ash. After the first boil the kier was cooled off and the goods run over into another kier without washing and boiled again with caustic and soda ash as before and for the same length of time, but after the second boil the goods were washed from the kier and chemicked at about ¾ to 1 degree Twaddle, and piled up in the bins for about three or four hours. They were then washed from the chemic and soured with sulphuric acid at about 1 to 1½ degrees Twaddle, and laid in this sour, in the bins, from four to five hours. They were then washed twice and mangled and dried up for the dyehouse, though sometimes we dyed some of the more delicate shades without drying them up.

J. R. (N. Y.)

EDITOR COTTON:

In reading over "J. R.'s" inquiry and his process of bleaching, will say that I find many points in which I consider him entirely wrong. In the first place he is very "shy" on washing, which is a bad thing for a good bleach. After steeping, his goods should have been washed into the kier with plenty of good clean water and not "run in." One of the chief reasons for steeping is that it softens up and renders soluble, by fermentation, the pectic matters in the goods (such as size, etc.) in such a manner that they dissolve out and are removed by the washing process, this, of course, is a great assistant to the thoroughness of the subsequent boiling.

After steeping and *washing* the goods into the kier, they may be boiled for eight to twelve hours at ten to fifteen pounds pressure with 180 pounds of caustic soda and fifty pounds soda ash. Then wash them out of the kier and sour with hydrochloric acid at 1½ degrees Twaddle and let them lie in the bins for three or four hours. Wash again into the kiers and boil as before with fifty pounds caustic soda and 100 pounds soda ash. Wash well out of this and chemic at ¾ to 1 degree Twaddle. Allow the goods to lie in the chemic for at least five hours; it will not hurt if they lie overnight if well covered up and kept from the light. Wash from the chemic and sour with hydrochloric acid at ¾ degree Twaddle, let the goods lie in this (in the bins) for three or four hours, wash well and mangle.

Now the goods being close and heavy, and the hydrochloric acid having a great affinity for the cotton fiber, it is almost impossible to entirely remove it with washing alone; it is, therefore, advisable to use a little ammonia in the water mangle waterbox to entirely neutralize any traces of acid which may remain in the goods; this is especially necessary if the goods are to be subsequently rubberized or subjected to any vulcanizing process.

It may sometimes happen that the goods are so closely woven or heavy that they may require boiling three times, the bleacher's experience will, of course, determine this.

In the foregoing process "J. R." will notice that hydrochloric acid is used for souring, which always gives the best results for goods for dyeing, especially heavy close goods. If, however, the goods are to be finished white, sulphuric acid will be all right.

By way of recapitulation, I will say that the mode of procedure, briefly stated, is as follows: Steep overnight; wash; boil ten or twelve hours; wash; sour in *hydrochloric* acid four or five hours; wash; boil a second time as before; wash; chemic ¾ to 1 degree Twaddle for four or five hours; wash; sour in hydrochloric acid ¾ to 1 degree Twaddle, for four or five hours; wash twice; mangle through weak ammonia water.

If the goods are to be finished white, sulphuric acid may be used for souring and the ammonia in the mangling may be omitted. If the goods are to be finished white and then rubberized or vulcanized, they must be boiled three times and the process will be run like this: Steep; wash; boil; wash; sour hydrochloric acid; wash; boil; wash; chemic lightly, ½ degree Twaddle; wash; boil, soda ash 1½ to 2 per cent alone; wash; sour; wash twice; mangle through ammonia. W. B. (Maine)

A large Indian firm of direct importers of hosiery from Europe, America and Japan have recently established a knit goods factory near Calcutta, for manufacturing jerseys, sweaters and underwear.

COTTON BLEACHERS!

Your Selling Agent,
the Retailer and the Public
want these qualities:

(1) A permanent clear white
(2) Material not weakened
(3) No yellowing on shelves
(4) Utmost softness
(5) Greatest elasticity
(6) Free from odors or poisons.

Are they getting them?

You can obtain all only
with the Solozone Process

The Roessler Hasslacher & Chemical Co.
709 Sixth Ave., New York

Asks for Spinning Room Report Forms.

Editor Cotton:

I should be very glad if some of your readers would send you, for publication in the "How Other Men Manage" department, some weekly report forms for use by the overseer in making his weekly report to the superintendent. For instance, suppose a man has so many spinning frames, and he reports his weekly production of so many hanks and also makes a report on his waste of all kinds, sweepings, hard waste, oily waste, and white waste—what do some of your readers use as a form in making out the report of this character? W. H. T. (Ga.)

(We shall be glad to receive any forms that would be of assistance to this reader. Of course, in publishing the forms, names of mills that might appear thereon would be deleted before preparing for publication.—Editor.)

Suggestions on Flyers.

Editor Cotton:

Recently I had the pleasure of a visit from two southern mill men interested in a new patent flyer. After they left my office I wondered if my article, "Wanted—An Inventor," which appeared in the May issue of Cotton, was a sparker for the idea.

This is also a southern idea, and judging from the various new ideas launched by southern men of late, the South will soon lead not only in textile journalism, but in textile inventions also. I am not at liberty to describe this new patent flyer as I would like to, but the readers of this department will no doubt remember that I terminated the article in the May issue referred to by saying, "What is badly needed is a flyer that will have the same pressure on the bobbin throughout the set. Now here's a chance for inventors."

The inventor of the new flyer has accomplished this desideratum, but in doing so gave little consideration to the friction that an improper flyer hollow leg will cause. One of the best shops building fly frames is turning out flyers that must be run at least a year before they run properly, and even then they do not equal the Bodden flyer. The chief feature of the Bodden flyer is in the shape of the hollow leg. Some makes of flyers lack the foregoing principle by having the top of the hollow leg almost square. The difference is best noted by placing a Bodden flyer over any other type; it will be found that the curve at the top of the hollow leg has a gradual bend which decreases the friction. The inventor of this new flyer had little or no knowledge of the above principle, for the reason that the top of the hollow leg on his new flyer is square. However, I think that a slot could be cut in the top of the hollow and curved similar to that of the Bodden, and at the same time have the small eccentric at the top of the hollow leg.

This is a pointer to the inventor.

If the flyer is run as constructed as present, it will be doomed to failure, and why? Simply because, first, the friction will be too great owing to the squared shape at the top of the hollow leg; and second, a flyer having the same pressure throughout the set and not controlled by the speed demands a change in the intermediate speeds, or in other words, the outline of the cones must be changed.

The inventor of this new flyer should have a pair of cones modified, and the flyer run with such constructed cones only. In the third place, another factor that must be considered is the pressure found at the termination of the paddle on all bobbin-lead frames. Destroying the pressure at the end of the presser pad means less work on the cone belt, and the less work on the cone belt, the tighter the tension.

I point out the foregoing for two reasons: these factors and others not mentioned will be the doom of this new patent flyer if run on any fly frame without changing the cones; and, secondly, it is a tip to manufacturers in buying new flyers. Some of them are getting stung every day.

The hollow leg having the gradual curve is, in my opinion, the flyer to buy. Wash (R. I.)

Likes the 60 Yard Cut Basis.

EDITOR COTTON:

I would like to see some discussion in COTTON on a standard for cloth, that is, a standard for yards per cut on the loom. I notice in the letters of most of your contributors that they mention 57 yards per cut. The mill of which I am now superintendent was running on the 57-yard cut basis when I took charge, and noticing that we had quite an amount of shorts and remnants in the cloth room, I made particular inquiry as to why the cloth room had so many shorts, etc. At that particular time we had an order for quite a good deal of cloth to be branded in 40-yard cuts, and running two-cut rolls on the looms made 114 yards in these rolls, and cutting two 40-yard pieces left a short of 34 yards, as it took a 40-yard cut to be called "firsts." There was a 34-yard piece left over for shorts which was and is classed as seconds against the mill, while if a 60-yard cut was the standard for a single, or the working of the "cut-mark," and having a two-cut roll taken off the looms, which is the standard in most mills unless on special or very heavy or very light goods, the two cuts would mean 120 yards, which if cut into 40-yard cuts would be an even three 40-yard cuts without anything left over.

After looking over the situation I changed the cut marks on the slasher to 60 yards, and when this got into the cloth room we reduced our seconds nearly 30 per cent. This proving okeh, I changed all classes of cloth to the 60-yard cut. Of course this meant changing the price per cut on the weaving, but that doesn't give any trouble if gone at in the right manner and fully explained to the weavers.

This was not only good for 40-yard branded goods, but it also works well on cloth that is put up in double and single cut bolts for the finishing departments. It means more cloth with less cutting, which is advantageous to all concerned, and I believe this should be adopted and made a standard.

We often have orders calling for so many pieces of 40 yards, and so many of 30 yards, some 50 and some 60 yards, and some at even 61 yards per cut piece. In this way, by looking up the orders, the bolts can be cut to the best advantage by observing the yards in each cut before starting to cut up. For instance, if a cut or bolt has 120 yards, this would be three 40-yard cuts; 110 yards would give one 60-yard and one 50-yard cut, provided this advantage comes in the order.

Of course this doesn't mean that there will always be a double cut of 60 yards, for so many things will happen to the contrary, but they are very rare, and the advantage gained on the 60-yard cut basis will offset the majority. I think it is a good conservative basis to adopt.

T. A. D. (Ga.)

Modernized Equipment Pays.

EDITOR COTTON:

Very recently I had the pleasure of a visit from a Massachusetts mill treasurer, an old friend of mine. During our conversation he wanted to know what the northern mills were going to do, for, he said frankly, his concern was operating at a loss.

Most northern mills are making money. The mills with which the writer is associated are making money. As they make money they spend money to make their mills better mills. You will find two conditions in the mills that are not making money; one is neglect, and the other is carrying too many deadheads on the payroll.

At the present time you will find in New England looms that are 40 and 50 years old. It is common to find the old Lowell and Colvin looms in operation. You will find mills in New England that do not take the trouble to steam the filling yarn, but instead, they have a small spraying can, and the box of filling is sprayed and taken to the weaver immediately.

It is common to see parts of machinery tied with rope.

Not replacing old machinery with new allows a business to prosper about as much as does a concern that does not advertise. Wash (R. I.)

A Loom Production Question.

EDITOR COTTON:

Here is a problem I should like to have some of COTTON'S readers figure out for me:

I have a Crompton towel loom, with a motion to govern the length. The sand roller is 4¼ inches in diameter, and has a gear at the end from the takedown, with 35 teeth, which meshes with another gear with 35 teeth that is fastened to the side of a sprocket gear that has 16 sprocket projections. The diameter of this sprocket gear is 4⅛ inches where the chain runs on it, the chain has a high ball to operate the borders and the length. With a 32-pick gear or any other gear, how much cloth would be woven per link, or how many links would weave so much cloth?

J. T. L. (N. C.)

A Question on Short Chain Beaming.

EDITOR COTTON:

I have not seen anything in COTTON on short chain beaming. Between the time the yarn is warped, dyed and sized, there is a certain amount of slack that gets into the warps. I should like to have some of your readers explain how it gets there, and what can be done to prevent it. We use Denn warpers. N. J. P. (N. C.)

GARLAND

A Fine Looking Loom
Harness of Great Durability

We believe that no more attractive looking harness is made than those which we are turning out right along. The harness looks smooth and feels smooth. The eyes are of just the right size, in perfect alignment and are open just enough to draw in well. The harnesses not only look well but they weave well and wear well.

Will you write for full description?

GARLAND MFG. CO.
SACO, MAINE

THE CORN ROCKER
AND
PARALLEL BEARINGS
WILL
Make your Looms Run Better

Less Breakage

Less Thin Places

Less Broken Bobbins

Less Wearing of Shuttles

No more wearing of **Rocker Shaft Bearings**

Bahan Textile Machinery Co.
GREENVILLE, S. C.

Towels and Toweling.

(*Continued from page* 24.)

rics U, V, W and X, Fig. 17, are given at Q, R, S and T respectively in Fig. 18. In these designs the colored threads are indicated in solid black squares, while the white threads are marked in crosses.

With reference to the use of twilled stripes in toweling and other fabrics it is a curious, but well-known fact, that in any particular fabric, one hand of the twill has a cleaner, smarter, and more pronounced effect than the opposite hand of the same twill. This point is illustrated in Fig. 19, where Y is the back and Z the front of a small portion of a fabric similar to those in Fig. 17. It should be remembered that a simple or single-make fabric which exhibits a right-hand twilled surface such as Z in Fig. 19, shows a left-hand twilled surface such as Y in Fig. 19, on the opposite side of the cloth. In the present case, the right-hand twill Z is obviously cleaner and smarter than the left-hand twill at Y, although in each case the weave is the 2 up 2 down twill, and the yarns and setts are identical.

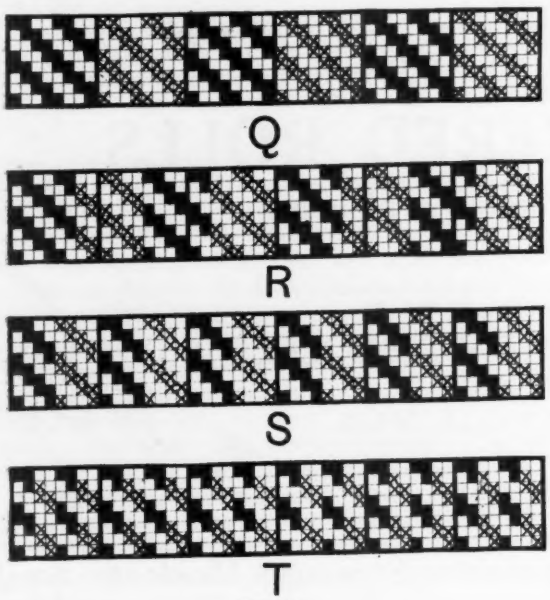


FIG. 18.

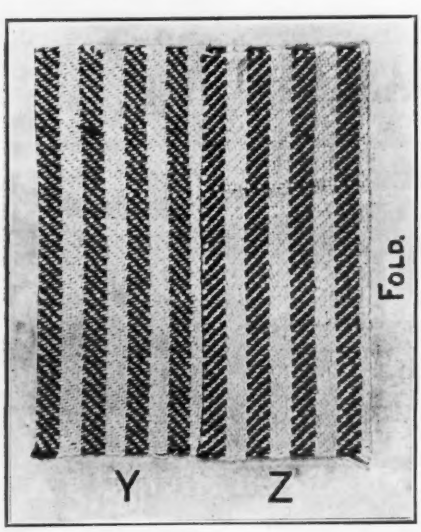


FIG. 19.

The variation in distinctness is due to the combined effect of the direction of twist in the yarn and the direction of twill in the weave. In the sample illustrated in Fig. 19, the filling is twisted in the ordinary direction, i. e., looking on the surface of the yarn the twist line is inclined upwards towards the right. The colored warp is 2 fold and is twisted in the reverse direction to its constituent yarns, i. e., the twist line is inclined upward towards the left. When these two yarns are crossed at right angles in the fabric, the under surface of the upper yarn lies on the upper surface of the under yarn, and at the point where the two yarns are in contact, the direction of the two twists are opposite.

As a general rule, the more pronounced twill in the cloth is that where the twill is oppositely directed to that of the twist in the yarn.

(*To be continued.*)

The Need for Exercise.

EDITOR COTTON:

The majority of mill executives and overseers have plenty of mental exercise if they work hard at all, but, as a rule, they have insufficient muscular activity. The nature of their work is such that it precludes the necessity of having to do much work with the larger muscles. The result is that a man actually becomes tired of doing "nothing" with his muscles. He begins to feel short of something and is apparently sick of his job. He believes that he needs a change. He is filled with lassitude, lacks pep, and becomes more or less irritable. He does not sleep so well as he once did; hates to get up in the morning, and wonders how he's going to put up with so much loss of appetite and disgust with the working conditions at the mill. He can hardly get around his work, and longs for the day's work to come to a close.

He spends all of his spare time in and out of the mill wearing himself out applying for another job until he finally "thanks God" he's found "just the change," he thinks he needs! But when he has undertaken the new job he finds that he is again in a strange pasture, and must work harder than he expected to catch up to where he was on the old job. He cannot find the resting places which he had so comfortably arranged for himself on the old job. It was a feathered nest to him and he did not know it. On the new job, he is being constantly hunted down for something that he has forgotten and must look up. He finds himself worse off with the new job than with the old one, although he thought he had accepted a smaller or an easier job. Soon he finds himself out of a job entirely, and begins to feel worse than ever. Before this he had at least some mental exercise and vigor but now he feels down and out and is also filled with despair.

What is the matter with this man? Is he incompetent? No, because he thoroughly understands his business. Is he sick? No, because he had no need of a doctor. Is he lazy? No, because he wants to work and would take all the interest that any man could take if that strange feeling within himself could be dispelled. What is the matter

TRADE **NOMARKOFF** MARK

THE NON SMOOTCHING KIND OF RUBBER ROLL COVERING
ESPECIALLY ADAPTED WHERE OILS AND SOFTENERS ARE USED

The SUPERIOR LINE of

RUBBER COVERED ROLLS

for Bleacheries and Dye Houses

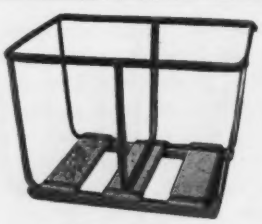
Write for Samples or Prices.

See our Exhibit, spaces 418 and 419, International Textile Exposition, Boston, Oct. 29-Nov. 30.

STOWE & WOODWARD CO.

RUBBER MANUFACTURERS

NEWTON UPPER FALLS, MASS.



The sturdy frame is constructed of steel, is practically indestructible and has cross slats and skids of wood.

Best for Doff Baskets, Storage Baskets and Distributing Baskets. They're Renewable.

Here is the basket that has come to the textile industry to fill a long-felt need. A basket that is renewable. SMITH'S 100% Better Baskets are made to last—a lifetime. Light in weight, yet they stand rough handling without injury.

Every mill in the country should begin using SMITH'S 100% Baskets AT ONCE. They are the baskets that will give longest wear under the most severe conditions of service.

Write us for prices.

SMITH MFG. COMPANY, DALTON, GA.

When the basket appears to be worn, all you have to do is slip on a new canvas cover and you have a basket practically as good as new. This is the basket for you. Use SMITH'S 100% Better Baskets and forget your troubles.

SMITH'S TRADE 100% MARK BETTER BASKETS

ALL STEEL **ECONOMY** FIRE PROOF **BALING PRESSES**

ALL SIZES FOR ALL PURPOSES

LARGEST LINE BUILT IN U.S.A.

ECONOMY BALER CO., DEPT. C, ANN ARBOR, MICH., U.S.A.

with this good man? He needs muscular exercise more than anything else, "Swedish," as they say in the navy, and the best thing he can do is to take up a course of scientific exercising. It will be better than medicine, or a change of job, dieting or a vacation or anything else. The trouble is that his muscles are dormant. They need to be exercised and awakened. He is suffering from an overdose of under-exercise. What is necessary for him to do is to stretch himself out when he awakens in the morning, stiffen his muscles and while holding them rigid he should move them into every conceivable movement and direction possible. Here are some suggestions:

Twist the legs and arms in all directions. Do the same with the fingers and toes. Pump yourself inwardly and outwardly laboriously, breathing at the same time while all of the these movements are being made. Do not hold your breath. Continue these movements for ten to fifteen minutes or more until you are tired and breathe deeper and faster. Have an abundant supply of fresh air while performing thus. Have little or no clothing on so that the limbs may have full swing. Kick as high as you can. Until one has kicked as high as he stands, he has not kicked high enough. This is the only time when a man is justified in kicking all he can when there is nothing to be kicked at! Repeat this dose at night before going to bed.

Keep this system up until you begin to feel the good effects from these exercises, then let up gently, but never entirely. Once an exerciser, always an exerciser, in some degree. It puts pep, health and enthusiasm into a man.

In this way the "old job" ceases to be a drudge. It becomes the best job in the world, and the only reason why a man would ever leave it is because the management tells him the job is not big enough for him and desires to promote him, or they willingly grant him a good recommendation to take that "bigger job" elsewhere. The fact is, he will have won out by exercising his body as well as his mind. Both require activity to round out the well-balanced physical man. Unless a man exercises both, one or the other or both will give out. At first it will not be easy to take on these strenuous exercises, but the early benefit derived therefrom will offset the strain of the beginner.

The trouble with most men of authority is that they study their problems so attentively and constantly that they forget the needs of the body, and begin to break down before they realize what is the matter with them.

If taken in time they can usually avert the beginning of the breakdown and brace up again. Sometimes a man breaks down completely and gives up. He is forced to take a job requiring muscular activity. He speedily recovers, gets into the ring again, and succeeds better than ever for having had some health giving exercise.

There are other exercises which should not be overlooked by the cautious mill man. They come in between those of the business, mental activities and the muscular exercises. The first pertains to the need of practicing being calm, cheerful, generous, clean of mind, self-reliant, and helpful to others, besides the ordinary business-like way of doing things.

This requires a strain of honest sympathy for the trials of those who work with him. This, in itself, upbuilds the nerve force, deepens and broadens the man's reputation. This also creates a big responsive cord in the service from those who work for him. This is the reason why so many men have found it so difficult to succeed men who have held their jobs a good while, and won this close confidence which cannot be bought. It is not given with the job. A man has to bring this to the job himself. Until he has clearly demonstrated that he has that good stuff to distribute among his help and associates, they will hesitate to "break bread" or to break even with him. This is a big thing with the successful man.

Secondly, between the business mental activity and the bodily work, comes the finishing touch of humanity. This has reference to that wonderful unseen factor called *inspiration* or *"esprit de corps."* Until a mill man actually taps this source of unseen power, he is still lacking completeness within himself. To be out and out on this part of our subject means giving attention to the religious needs of the man. The prayerless ungodly man neglects the greatest possibilities within himself and others for complete usefulness. There is no getting away from this well known fact. "No man liveth unto himself alone." Men and their capacity for work were created by our all-wise Creator. We should not forget Him in our work.

Every man should be counted in as an active worker in some capacity with some religious institution. This develops the visions and insures the largest usefulness of mankind. Many mill owners and their agents, managers, superintendents and overseers have this kind of exercising down finely. Many more mill men need this kind of exercising and all of us need it just as much as we need to eat, and need the money to secure the wherewith of life's needs. The man who neglects these high ideals is apt some day to go home "broke." Beware of falling "short." Be "long" on the good side of creation.

H. D. M. (Ga.)

Balancing Flyers.

Editor Cotton:

I have been reading the article of "Gen (Mass.)" in the August issue on balancing flyers on the roving frame. That's a mighty good thing; it pays to look after the flyers and keep them in order. But I cannot understand why he thinks it costs from 35 to 50 cents per flyer to do the job, or why he says that you can get trained men who will go right to the mill and do the job at this price. "And it's worth it," admitting the price is reasonable for such a job. Think of a frame, with 150 spindles, costing even 35 cents a spindle; that's $150 \times 35 =$ $52.50 per frame.

Last fall and winter I had 92 frames gone over and the flyers re-pinned, balancing every one, using four men, working ten hours per day, and the cost per spindle was only 6½ cents plus the price of the flyer pins. And we got a satisfactory job; you can stand and watch the frames and see that they are balanced. I don't believe much in getting "experts" to come and do the work when we are all experts if we will only apply ourselves and get down to work.

I am by that like I am by having a man in the department to do the card clothing repairs. If a mill hasn't one, they should teach one. They will think more of the jobs daily if allowed to learn those jobs that the mill has been sending out and getting "experts" to do. I know there are experts, and I like them, but, supposing they all die in one day. Where would we be? Well, then, let us teach someone to do these repairs and allow them something extra per day, and we will not be dependent upon someone whose services we may not be able to secure when we need

them. In a nutshell, it's service when you need it, and your brother may be needing it the same day, and the expert cannot work for both of you at the same time. That means delay, and the boss will want to know why such-and-such a thing hasn't been done. Shall we tell him we are waiting for an expert to start us up?

We advocate that the farmers be self-supporting; why not the industrials, also, by teaching men to do the necessary daily repairs; and then, if we get up against it, we can call on COTTON's contributors. I'll guarantee we'll get away from that which we are up against. Some may say that they cannot wait until the next issue comes out, which, perhaps, may be true in some cases, and in that event, COTTON is in shape to have a special correspondence service which will come straight to you and will get there as quick as the expert would, and the boss won't think you are getting somebody to run your job.

The boss might not say that, but he will give a sarcastic look which cuts like a two-edged sword, and causes a man to think: "Now I've played hell; I ain't worth thirty cents," and get downhearted and take a spell of the blues, when he should have been teaching some of his promising young fellows to pick up this work when it occurs. It's just thinking and planning a little ways ahead. The overseer is paid for thinking in advance and being prepared for any emergency that may arise; when something comes up and the boss asks, "What are you going to do about it?" there is nothing that pleases him better than to get the reply, "I've got a scheme that will get us out of that okeh."

T. A. D. (Ga.)

Light Versus Heavy Laps.

EDITOR COTTON:

We don't hear much now-a-days from the "long draft boys." How come?

You will remember that several months ago I had some discussion on this point, and those advocating the long draft didn't give us one valid reason why they think a heavy lap is best. They did state that it improved the work and that the yarn was made stronger, etc., but they didn't point out how this was possible or what made them believe in a heavy lap.

Here is why I believe in a light sheet of lap: On all up-to-date cotton cards, the distance from the heel of one flat to the heel of the next flat is one and three-quarter inches, and the flats assume an angular position relative to the cylinder. The edge of the flat, called the toe, is the edge farthest away from the cylinder, and the side of the flat nearest the cylinder and used for setting purposes, is the heel, which is about 3/1000 of an inch nearer the cylinder than the toe.

With this in mind, suppose we have an 18-ounce sheet of lap at the back of the card, the stock averaging two inches in length; what happens between the flats?

It must be admitted that most fibers are under the action of two flats, and the combing action here all depends on the flat that has the sharpest points of wire. If the preceding flat is dull, a curling action is sure to result. There can be no argument on this point. Therefore, to reduce the amount of work done by the flats and to insure a proper combing, the only way is to decrease the amount of fibers presented to them, which is accomplished by a lighter sheet of lap.

Of course, the "long draft boys" might say that with the same weight sliver in front of the card, the same number of fibers would be presented to the flats with a heavy or light sheet of lap, which is true. What I wish to bring out is that when the fibers exceed the distance between the biting points of the flats, the sheet of lap should be made as light as possible and the weight of the sliver made as light as possible. Two good reasons against running a heavy sheet of lap are (1) the licker-in has a better opportunity for plucking the cotton in large tufts; and (2) it should be borne in mind that it is much better to make your feed-roll revolve faster and save the cotton, than to have the feed-roll running slowly, and the licker-in teeth pulling the fibers away from one another, which results in injury to the fibers.

The action at this point is similar to that running a heavy sliver between the drawing rolls. The heavier the sliver, the more fibers in the crosssection of the strand which holds the top leather roll away from the bottom steel roll, and the fibers are drawn in clusters, as was the case of the lumpy roving mentioned in the question of "Y. T." some time ago. Is it not fair to claim that the same action takes place between the feed-plate and feed-roll?

Now let us get at the back of the card. We find the distance from the bite of the feed-plate and feed-roll to the bite of the licker-in teeth is one and one-half inches, and this distance will be found to be less with the majority of feed-plates that are now in use. Therefore, if we have an 18-ounce sheet of lap made up of two-inch stock with a slow revolving feed-roll, the fibers are under the action of both the feed-roll and the licker-in. So if the licker-in teeth are sharp and get the best of the dual operation, most fibers are injured.

I hope the "long draft boys" will come [illegible] and explain what's wrong with the foregoing discussion.

Wash (R. I.)

[Editor's Note.—"Wash" neglects to state where he got all that two-inch staple cotton, or how many mills he expects to find using it. We are inclined to believe, considering the prospective scarcity in one-inch uplands, that "Non-Compos (Ala.)" might be induced to figure out the amount of two-inch staple in use and devise a way to accurately bisect this two-inch staple, thereby producing twice the quantity of one-inch staple and thus help out what promises to be a serious cotton shortage. We wish it thoroughly understood that we are casting no reflections on the discussion advanced by "Wash," whether hypotetical or actual, in making this more or less figurative suggestion.]

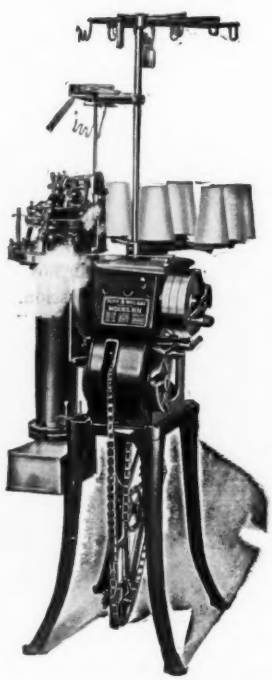
Park A. Dallis, architect and engineer, has removed his offices from No. 6 West Harris Street, Atlanta, to Room No. 1604 Candler Building, Atlanta.

Coincident with securing this enlarged office space, Mr. Dallis has increased his working force by securing the services of Winton Flinn, who for a number of years was associated with the Engineering Department of the Southern Railway. Since the war, Mr. Flinn has been connected with the United States Shipping Board and, in the capacity of supercargo, visited England, Germany, France, Japan, China, the Philippines and other foreign countries.

KNITTING SECTION

NEW MODEL H-H

Producing Ribbed Top Half Hose Complete



Ribbed top made on two sets of needles.
Automatic transfer from ribbed stitch to plain.
Eliminating necessity of skilled help.
Saving of raveling waste which occurs when topped by hand.
Each stocking is dropped from the machine when finished.
Each stocking is automatically started upon the empty needles, producing a French welt without drawing thread or cutting, no ends of any kind to be removed.
Machine is fitted with five yarn fingers.
Provision is made for high spliced heel and double sole.
Provision is made for ring top and ring toe.
Speed of machine about the same as Model K.
Production about twelve stockings per hour on 3¾" 220 needles.
One operator can take care of the same number of machines as Model K.
The machine is built in all gauges.

ESTABLISHED 1865

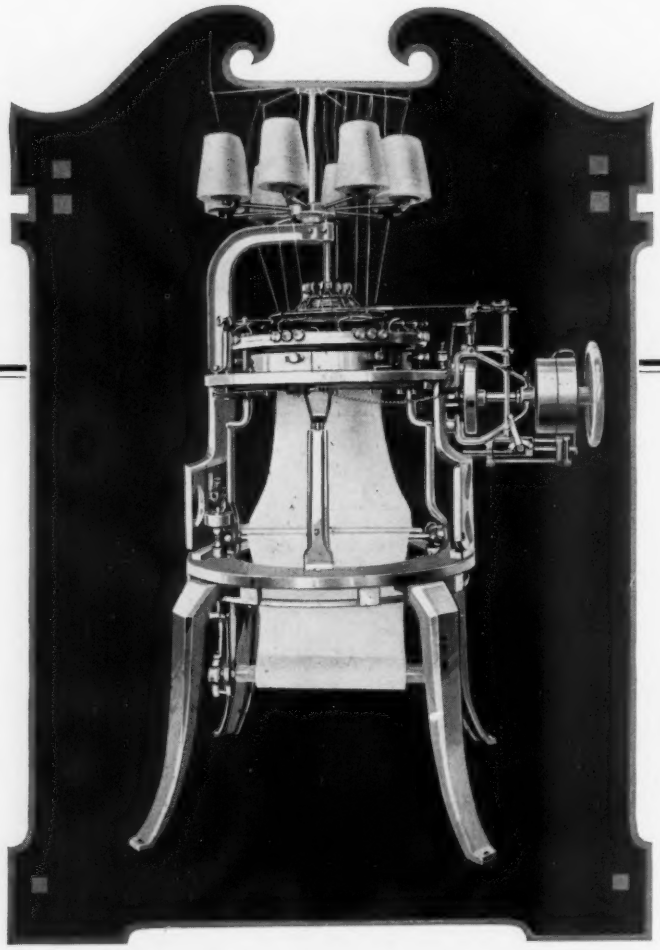
SCOTT & WILLIAMS

INCORPORATED

366 Broadway **New York**

Hamilton, Ont.
Main and McNab Streets

High Point, N. C.
401 Wachovia Building.



Wildman Spring Needle Body Machine

Perfection in knitted fabrics is assured when your product is made on the Wildman Spring Needle Body Machine.

Every Wildman Machine is known for its accuracy of mechanical construction in all details and the uniform high quality of materials used in its manufacture.

Nothing is left to guesswork.

From the original design to the fina knitting test, each operation is under the control of experts in our own completely equipped plant.

Let us send you an illustrated instruction book giving full information about the Wildman Spring Needle Body Machines.

We have issued a very complete and informative book, "The Science of Knitting"—Price $3.00

TRADE MFG MARK

WILDMAN MFG. CO.

NORRISTOWN, PA.

Developments in Loop Wheel Knitting

BY WILLIAM DAVIS, M. A.

The loop wheel occupies an honored place in the equipment of the hosiery manufacturer and its origin dates back to the time when factory knitting commenced. It is a distinct system of knitting and like all other remarkable inventions was practically perfect at its inception, the type having been little altered throughout the years. The products of this frame hold a very important place in the market. American machine builders have greatly developed this machine in many ways, introducing modifications, but none of these have departed fundamentally from the basic principles of the loop wheel frame. Its chief development has been a remarkable adaptation for what are termed fleecy backed fabrics which have been largely employed in the American market for knitted goods and have also taken a prominent place in the export trade.

The loop wheel fabric by reason of its excellence of texture, and particularly the firm cloths which are possible of production, is widely useful for other purposes than underwear. A leading line of men's overcoats have been for years produced on the loop wheel machine where heather mixture woolen yarns are employed, worked on a gauge of about 10 needles per inch, the stitch being knitted very closely on the needles so as to increase the weight. This combined with suitable finishing has produced a line of light weight overcoatings which are largely used in the belief that they are of ordinary woven construction and they give very satisfactory service in wear. The fleecing attachment is also employed with considerable success for producing the more expensive and heavier overcoatings which are made in two materials, the best quality being brought onto the face while the backing gives opportunity for using a cheaper material there if required by the exigencies of price.

Loop Wheel Frame Structure.

This machine was fully described in the May, 1919, issue of COTTON and it may be of advantage to summarize the chief features of the machine again and show the developments which have taken place on the newer type Billson's machine. Fig. 1 shows an elevation of one section of the loop-wheel frame where one complete feed is given with the constituent wheels in position relative to each other. The frame differs from most other kinds by having its needles of the bearded or spring variety, these being arranged vertically in the machine round the circumference of the circle. The number of feeds depends on the diameter, a usual figure being six or eight according to the width of fabric required. The vertical arrangement of needles causes the fabric to proceed from the needle ends in a vertical direction and the wind-up tackle is located above the machine. The needles and the needle cylinder revolve while the loop wheels and thread guides are stationary. The loop wheels however have a rotating motion on their own axes during stitch formation and the members are shown in detail in Fig. 1. The needles are given at N as a series of dots arranged round part of the circle and there is an outer ring A to which certain wheels are fixed while others are attached to an inner ring B.

The vital parts in loop formation are shown in Fig. 1 where T represents the thread and the thread guide TC. The next wheel in the series is the loop wheel or sinker burr SB which is bladed after the manner of a miniature windmill wheel. The next bladed wheel is termed the dividing wheel DW and next to this is the presser P which is a perfectly plain disc against which the needle springs pass during stitch forming. The next two wheels in the sequence are those attached to the inner ring B, LW being termed the landing wheel and CB the knocking-over wheel, whilst the part marked HI is the holding-down iron. On the extreme left of the diagram is shown the clearing wheel.

System of Stitch Formation.

Following the various stages in the circle it will be easy to describe the complete operation of loop making on this machine which has a very high reputation as a web producing agent for the knitting industry. The yarn is wound on large bobbins and the thread drawn through the thread guide TC which places the thread across the needle stems, the old loops being low down on the needles to keep the upper needles clear for the new course of loops. The thread so laid by the guide next arrives at the loop wheel SB,

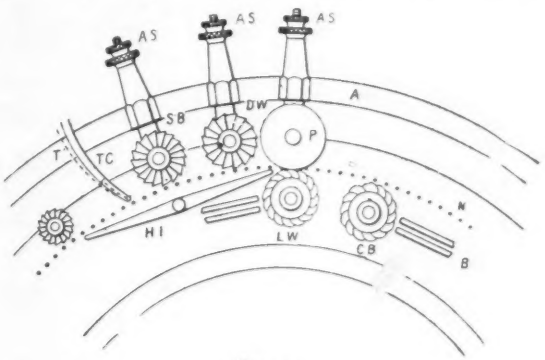


FIG. 1.

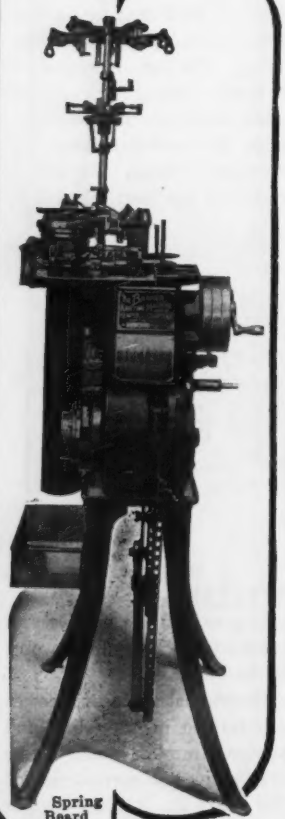
the blades of which are made to gear into the needles and are consequently set to gauge so that as the needles revolve the wheel is caused to turn on its own axis.

The bite which the blades or burrs make into the needles determines the size of the loop formed in the fabric and this can be regulated by the tension screw AS which can be turned to right or left in order to give the correct size of loop. Obviously the deeper the burrs dip into the needles the longer will be the loop formed, while for short loops the needle burrs are drawn away from the needles so as just to touch. This wheel SB is arranged at such an angle so that it not only pushes the yarn over the needles to provide thread for the new loops, but also draws these loops under the needle springs or beards.

To bring this about the burrs have an indenture at their extremities which catches the yarn and controls it in such a way as to fetch it up under the needle beards. In this process the thread becomes rather irregular in length and the sunk loops next pass under the blades of the dividing wheel DW which, as is indicated by the designation, divides the yarn equally over all the needles of the machine, thereby conducing to perfect equality of mesh. The needle beards next pass against the rim of the presser wheel P which has the function of pushing the springs into the grooves

The Banner

Full Automatic Hosiery Machines



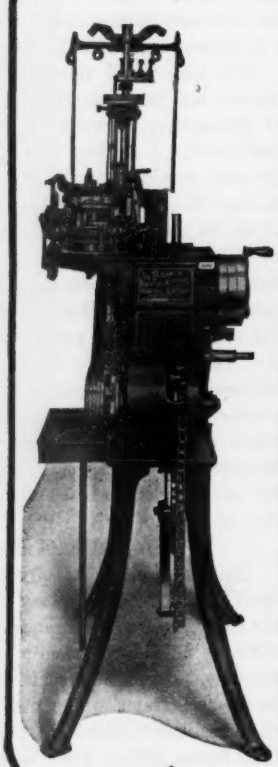
Spring Beard Needle Machine

Simplicity
Quality
Speed
Production

All Parts Accessible from the Front of Machine

We have just placed on the Market two new models– The Spring Beard Needle, built in sizes of 3" to 3 3-4" diameter, and a new model ·–Split Foot Machine, built in sizes of 3 1-4" and 3 1-2" diameter.

Write for descriptive catalog



Split Foot Machine

HEMPHILL COMPANY

MAIN OFFICE AND FACTORY PAWTUCKET RHODE ISLAND

TRADE MARK

SOUTHERN OFFICE and SHOW ROOMS
912 James Bldg.
CHATTANOOGA, TENN.

PHILADELPHIA OFFICE and SHOW ROOMS
208-9-10 COLONIAL TRUST BL'DG.
PHILADELPHIA, PA.

until the old stitches on the lower stems can be landed on to them. This process is performed by the landing wheel LW shown in the inside of the needle circle attached to the inner ring B. This wheel is adjusted at such an angle and placed under the fabric so that the latter will be forced to travel upwards, thus landing the old loops onto the beards at the correct moment.

The process is taken to the final stage on arrival of the fabric at the discharge wheel CB which is placed higher in its position so as to force the fabric over itself and draw the new loops through the old ones, the latter being discharged from the needle ends to join the general body of the fabric. On the extreme left is shown the clearing wheel on the outer ring which gears into the needles and insures that odd stitches are cleared from the needles before the fabric is pushed onto the lower stems to prepare for the next course of loops. The latter process is effected by the holding down iron HI which is placed in such a position above the fabric as will force it downward to make the stitches take their place on the lower stems. When this is done the process is repeated and so on through all the feeds of the machine.

For the fleecy goods above referred to, additional tackle

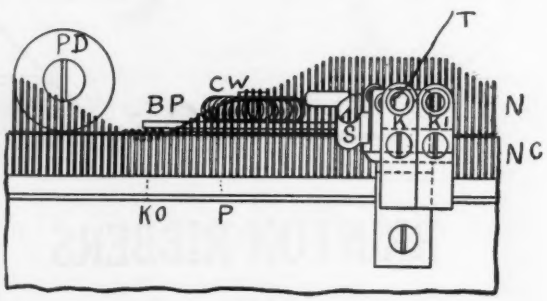


FIG. 2.

is essential and one thread is employed for the face, with the thicker counts of fleecy yarn on the back. As the fleecy thread is generally too thick to intersect on the needles at each course the third thread is introduced as a binding agent which dips into the face and back alternately thus holding the two series of threads together. Fancy patterns can also be produced by cutting suitable designs on the presser wheel. For plain work this wheel is a solid disk as shown but for fancy patterns this can be cut with spaces which miss the needle beards and do not press so that two stitches remain on the needles to be pressed at the next course.

Billson's New Development.

The object of this article is to show a development made on this type of machine brought out by Billson's Patent of Nottingham, England, which may be regarded as a most important step in the growth of this type of machine. In this machine the general system of lay-out and the machine standards are retained but the system of knitting is entirely changed with the result that the parts are considerably simplified. The general arrangement of the parts composing a feed are shown in Fig. 2 which is a plan giving the stages of stitch formation on this machine.

It should be stated that the principle is quite new, as the needles work individually in the needle grooves and move up and down during loop making. At the same time the needles move round with the needle cylinder while the thread bobbins are stationary. It then follows that we require a cam ring and the needles have to be made broader and stronger with heels or butts to enable them to work in the camway and stand up to the friction which this entails.

The various parts are marked as follows in the diagram, Fig. 2: T is the thread which is drawn from the bobbin in the usual manner. K and K1 represent the thread guides, K being employed for the ordinary yarn and K1 retained for the addition of a plating yarn if required or when threads have to be worked two-ply in a fabric. The next member of importance is the spring S under which the thread passes and which serves to retain control of the thread and hold it in its proper position on the needle stems. The spring also ensures that the thread shall pass over the upper side of the blades of the next member termed the control wheel CW which is placed on the opposite side of the needles and provided with plain burrs which gear into the frame needles on the principle of the loop wheel. It is not, however, a loop wheel but merely exists for keeping the thread on the upper stems and drawing it under the needle beards which it does by reason of its position in relation to the sinking needles.

In front of the control wheel and outside the needles a little to the left of it is located the presser wheel P, not shown on this sketch, this being a plain disk about 2 inches in diameter like the standard presser used on the loop wheel frame. In connection with the knocking over of the loops it is interesting to note the point KO where the

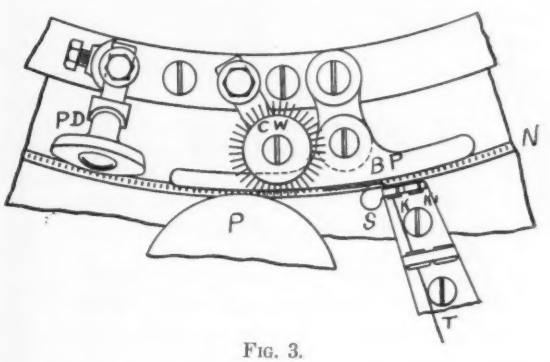
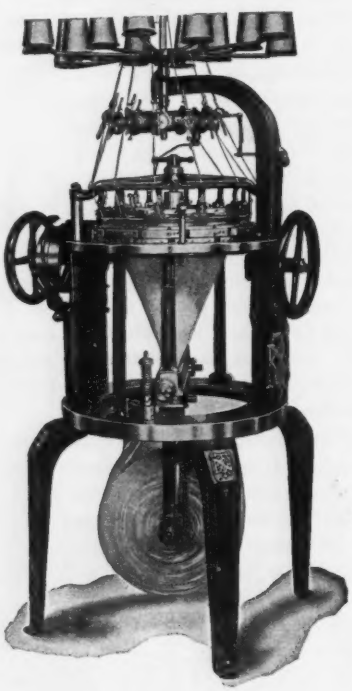


FIG. 3.

needles are shown at their lowest position and where the new loops are drawn through the old ones for knocking over or discharge.

The needle cylinder is shown to extend as far as the line and at the knocking over of the stitch the needles descend a little below this so as to draw a sufficient length of stitch, the loops being supported on the edge of the cylinder ring while this is being done. The last member of the series is marked PD, this being a plain wheel disk positioned vertically with the function of keeping the fabric which has just been produced down on the lower stems while the needles rise again to the starting position.

What should be specially emphasized regarding this machine, which marks a new departure in the knitting process, is the extreme simplicity of stitch formation as compared with most other systems of knitting using the bearded needle. In most machines we have from time immemorial been taught that it was an essential thing to divide the loops and sink them as, for example, on the old hand frame and



PRECISION

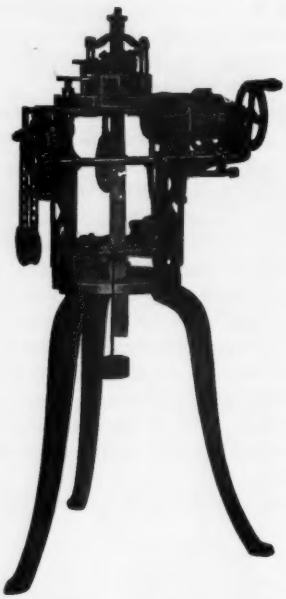
Successful knitting depends on accurately cut Cylinders and Dials.

For many years we have been equipped with special dividing heads from which we have manufactured Index Plates unsurpassed for accuracy.

The Cylinders and Dials resulting from such superior methods are then hardened and scientifically tested.

This careful procedure guarantees a precision and durability resulting in the consistent production of faultless even fabric.

TRUMP BROS. MACHINE CO.
Successors to
NYE & TREDICK CO.
WILMINGTON, DELAWARE
Cable Address—Trumpbro—Wilmington
Southern Agent—H. F. Booth, Cheraw, S. C.



BRINTON RIBBERS

possess all modern improvements, including selvage welt, French welt, double knee dogless and striping attachments, with automatic stop motions.

Built in all sizes for all classes of rib work.

We also build hosiery knitters and Body machines for underwear and various other circular machines for all kinds of knitted articles.

Samples and prices on request

H. BRINTON COMPANY
Kensington Ave. & "M" Street
Philadelphia Pennsylvania

on the more modern Cotton's patent frame. An examination of Fig. 2 will show that the knitting action is simply performed by the needles drawing the thread through the yarn guide when, controlled slightly by the spring, it immediately passes under the needle beards. At this stage it should be noted that the needles are given an upward movement as this insures that the new thread is laid clear of the beards before the needles descend to take the thread under the beards. The spring guides the thread over the top of the control wheel which draws it up to the extremity of the beards before they fall, but there is no sinking or dividing action on the thread. The needles draw their own thread required for the stitch at the point KO where they sink below the level of the needle cylinder edge and draw their yarn into the loops.

The process will be made perfectly clear by a reference to Fig. 3 where the stitch-forming parts of this machine are shown in elevation with the presser P added at its correct place in the circle. In this diagram the various parts will be recognized; the needles appear as a series of dots arrayed around the circle and this view shows more plainly other essential parts of the machine. This is particularly the case with the back plate BP which is seen screwed to the inner ring, its function being to afford a support to the needles at the back as they are being pressed and during the knitting action altogether. It is clear that the push of the presser and the friction of the thread would tend to move the needles backwards and so interfere with

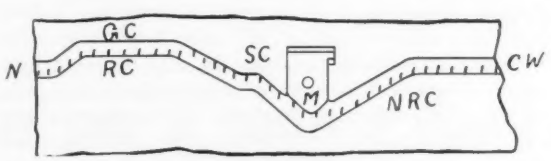


FIG. 2.

a clean formation of the loop. The other parts of the feed will be recognized to correspond with Fig. 2 and an opportunity is given to study the operation of the presser and the control wheel during the landing process. The presser is shown pressing the beards a little to the left of the point where the control wheel gears into the revolving needles and the relation of the back plate to the spring and the presser is clearly shown; the whole arrangement combines to give an absolutely clean style of stitch formation. The mesh of the fabric is also of the high quality usually associated with web from a machine using the bearded needle.

A survey of the stitch forming section as given in Fig. 3 shows where it is simplified as compared with the loop wheel formation illustrated in Fig. 1. The reduced number of parts also make it possible to arrange a large number of feeds in the circumference of the machine with consequently higher production.

Cam Formation.

The system of cams employed for the knitting action in this machine is illustrated in Fig. 4 where the chief members are indicated by their names. This will be found to correspond with the path of the needles shown in Fig. 2 and the following explains the nomenclature for the various pieces: GC is termed the guard cam, this being required to control the needles in the camway and to insure that they do not rise higher than the normal height. The cam marked RC is the raising cam which lifts the needles at this point, the needles indicated by N pass along the enclosed camway marked by CW. The stitch cam is given by SC, which has at its nose the part M, is adjustable according to the tightness of stitch called for. The next cam is marked the needle return cam NRC over which the needles pass to the normal inoperative level of the machine.

Entering from the left the needles are raised by the raising cam but this should not be confused with the similar operation as performed on the latch needle circular frame when the rise of the needles is to enable them to receive the thread from the yarn guide. In this case the raising of the needles is performed so as to clear the beards of any interference with the thread before it is ready to pass under the beards of the needles. The butts N next pass along the left side of cams SC, which draws them down until they reach the point M, when the knocking over or discharging of the stitches takes place. After this they come against the side of the needle return cam NRC which restores them to their normal level in the camway.

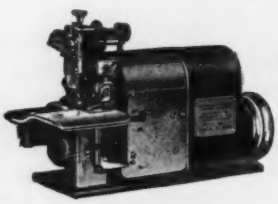
Additional Features.

The clearing of the machine head from so many knitting parts has greatly increased its accessibility to the worker who has the whole circle of needles under uninterrupted observation and he can also obtain ready access to the machine parts should it be required to take out any of the cams. For this purpose a section has been devised in connection with the cam ring which can quickly be brought around to any particular feed for the removal of cams. There is also a running-on section which can be brought to the point where the running-on of new fabric is required whereby the needles can be raised and kept firmly in position during the process. At a suitable point at each feed an opening is made to allow broken needle parts to fall down so that they can be speedily ejected from the machine camway. In existing types it often happens that needle butts or sliders get broken in the camway and the fragments cause considerable damage to the cams before their presence is discovered. In this case they at once fall into a lower position out of the reach of the cams and from which they can be easily removed from the machine.

In most circular machines the tension screws used to regulate the length of loop are placed in a prominent position which attracts unthinking individuals who feel a ready impulse to turn those screws thus altering the tension of that particular feed in relation to the others. This is a frequent source of uneven texture in knitted web and is rather difficult to locate. In the machine under discussion the tensions are rendered practically foolproof because three screws have to be altered to correspond before the real tensions are affected, so that it requires skill to make any alteration in these. A point which will appeal with special force to manufacturers who already have a number of loop wheel frames is the fact that they are readily convertible to the new system.

According to the report of the Assistant Trade Commissioner of the Department of Commerce at Pernambuco, Brazil, the state government of Pernambuco is considering establishing ten cotton gins on the banks of the San Francisco River, constructing railways and roads and arranging for other improvements in the cotton growing district bordering on the same river.

MERROWING



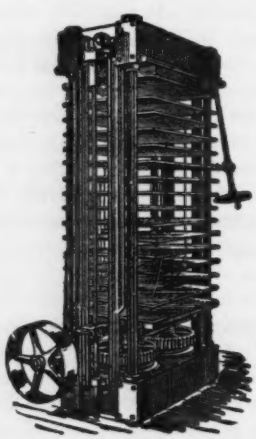
MERROW
Reg. Trade Mark.

The Merrow High Speed Overseaming Overedging and Shell Stitch Machines.

MERROWISE FOR EFFICIENCY

IT MEANS: MAXIMUM PRODUCTION
MINIMUM EXPENSE
UNEXCELLED QUALITY OF WORK

THE MERROW MACHINE COMPANY
ESTABLISHED 1838
16 LAUREL ST., HARTFORD, CONN., U. S. A.



RELIANCE
Hot Plate Screw Press
FOR
Hosiery and Underwear
Write for Catalog and Prices
Reliance Machine Works
FRANKFORD, PHILA.

JOSEPH T. PEARSON & SONS CO.
MANUFACTURERS OF
BONE DRY
HOSIERY FINISHING BOARDS
THAT WORK ABSOLUTELY SMOOTH
PROMPT SERVICE—RIGHT PRICES
1815 E. Boston Avenue, Philadelphia

GENERAL MACHINE WORKS
YORK, PA.
Manufacturers of
Circular Rib Knitting Machinery
Cylinders and Dials

The Possibilities in a Hosiery Combine.

A big, powerful organization in which would be vested control of a large part of the production of staple hosiery, has been the dream of more than one manufacturer whose success in overcoming perplexities and meeting grinding competition with small establishments has enabled him to visualize the possibilities of such a pooling of interests. That a centralizing of control may be brought about by force of circumstances was strongly intimated a few days ago when formal announcement was made of the organization of the F. Y. Kitzmiller & Sons Co. to operate at least four hosiery mills, with a combined output of 4,000 dozen pairs a day. Mr. Kitzmiller, who a few months ago withdrew from the Taubel, Scott, Kitzmiller Co., is quoted as saying "The last few years have brought about the greatest development in the hosiery business, and I think its ultimate future—a great one—will rest in the hands of the few."

This thought was not original with Mr. Kitzmiller, who has come to be recognized as one of the possible dominating factors in the industry. It was uppermost in the mind of H. A. Romberger, who but recently retired after amassing a fortune from an investment of $8,000 in an interior Pennsylvania mill 28 years ago. Through fortunate investment of his profits from hosiery, he can boast of possessions worth two million dollars. Evidently he was in no need of a controlling organization, but he admits he owes his success to close application, hard work and "taking a chance"—operating his factories when, during dull periods, many were closed down. But he went through some trying experiences that, in his judgment, called for a lessening of the business hazard by some process for keeping production more evenly balanced with distribution and averting the accumulating of stocks which often spell loss for those owning them. Others who are in accord with Mr. Romberger went even further in their ideas of a practically perfect controlling organization.

The one great obstacle to the complete working out of any plan for control, it has been pointed out by more than one manufacturer, is the availability of knitting machines to anybody who wants them and has the money to pay for them. "I would be willing to go into a company organized along the lines of the United States Steel Corporation if it took over the control of the distribution of knitting machines," one leading manufacturer said. "Then we might have a measure of stability, although there still would be no less keen competition among the manufacturers in the combine. Raw materials and mill supplies could be bought in the largest possible quantity, various types of hosiery staples could be standardized as to yarn content, and in many ways the cost of production could be reduced. The credit risk would be lessened, prices would be less variable and the marketing of hosiery simplified to the advantage of manufacturer and distributor. But the organization would have to be in control of the machinery output and sale, as otherwise there would be no less confusion than at present when buyers feel the market is in their favor and some mills operate without profit in the hope of pulling themselves out of a tight hole."

A Middle West mill executive, who says he has made a study of the subject, believes one central organization of hosiery manufacturers would not cover the ground. He contends there would have to be at least two—one of mills selling to jobbers and one distributing through retailers. Each of these, he suggested, might be subdivided into classes making silk, wool and cotton hosiery, respectively.

The nearest approach to a combination of one class of hosiery manufacturers was attained in very recent efforts to merge a half dozen mills in New England. It was stated at the time that the checks of the promoter had passed to several of the mills in the deal then pending. Arrangement for the complete financing of the merger, it is understood, has not been wholly effected, but it is stated the proposal has not been abandoned.

About the time the world war broke out a merger of large underwear mills was projected. The movement died a natural death after being nursed along for a year or more. A few months ago a similar project, but on a smaller scale, was launched. It was said to embrace a southern mill. The P. H. Hanes Knitting Co. made denial that it was a party to the deal, although its name was freely bandied around in that connection.

Thus far mergers of knitting interests have been on paper only. There have been plenty to give assent but not enough to make a substantial showing such as would be called for by any large organization surrendering control of its property. Some persons in the trade would not be surprised if there were inaugurated a movement for organizing the hosiery and the underwear manufacturers of the southern states, where scattered control of the production of several classes of hosiery already is vested. Such a proposal, several northern hosierymen say, would have a fair chance of success. But, it was suggested by one, it would be followed by a similar organization of northern manufacturers, and even so, it was thought, the trade would be on more friendly terms with itself and get rid of a legion of abuses.

A method of determining costs in a fine fancy cotton mill has been issued by the National Association of Cost Accountants, 130 West 42nd Street, New York City. The brochure is prepared by William A. Musgrave, who, after charting the distribution of duties in the type of mill referred to, and the general organization of the plant, successively treats of standard costs, direct material control, direct labor, production reports, burden, predetermination of cost by style, and submits a sample cost sheet, a chart of accounts to be used in the supplies and repair department, a chart of accounts kept in the general ledger, and a monthly operating and profit and loss statement. The price of the booklet to nonmembers is 75 cents per copy, and copies may be secured from the book department of the association at the address given.

An interesting collection of industrial plant photographs is shown in a publication issued recently by Charles T. Main, engineer, 200 Devonshire Street, Boston, Mass. The photographs in this volume, including a number of textile plants, illustrate a few of the industrial plants for which this organization have been engineers, and the varied fields covered indicate the wide variety of their work. This book is Volume 3 of a series of publications issued by the Main organization.

The best executive is the one who can develop the best that is in others.

The Yarn Market

October was anticipated as a sort of an oasis in the extended desert of dull times through which the Philadelphia cotton yarn market has been struggling for the past half year or so; but it disappointedly failed to live up to that expectation in the volume of actual business produced, or in the contribution of much toward the stabilization of conditions.

A continuation of the dull business condition obtaining in September was brought over into the month that brings us Hallowe'en. Of course, business was transacted, and some of it to good advantage, but what is meant is that, speaking generally, the same noninvigorating lassitude on the part of yarn outlets persisted for the first weeks of October, at any rate, though, when put on a comparative basis, it was generally reported that, speaking broadly, September produced quite a bit more actual business than did August, and while October was yet young it seemed that it was going to vie with September in the comparative proposition and give November a still higher mark at which to shoot.

These are generalities, however, and maybe the Frenchman was right who said, "Generalities, including this one, are not reliable." However, the foregoing pictures the average condition of the market.

The major cause to which the slackness in business transacted was attributed was a stolid indifference on the part of yarn consuming plants toward the sales argument of the yarn dealers' representatives. It was generally agreed that this in turn was a result of lack of business coming into those men's plants. Cotton quotations, reactions and fluctuations, general business conditions, and all of these things undoubtedly had their influence, together with fluctuations in the prices of the yarns themselves, but the biggest factor entering into the condition, the dealers in this market seemed agreed, was the attitude of the consumer who kept a constant eye on the order-books of his own salesmen. When these begin to produce, he begins to evince an interest in yarns, and if his own orders warrant it, he buys; and it doesn't make much difference whether there are rains in Texas, or whether the weevil in Georgia was unusually active. This seemed to be the condition as interpreted and related by yarn salesmen who keep in close touch with their various accounts; and just at this time they maintain as close a contact as possible. It was stated, however, that most of the business done in this manner was quite naturally of the hand-to-mouth variety.

As to prices—speaking generally again—the level was neither stable nor equitable when considering the market's individual component parts and its various counts of yarn. On the whole, however, through latter September the price level remained on the higher plane to which it had been boosted by early September and August. The first part of October saw reductions showing up in various parts of the list, some affecting other counts by their influence. These concessions seemed in the main to come from yarn holders desiring business and desiring it more intensely or eagerly than those who preferred to stick with the ship, and were willing to shade the average quotations in order to relieve themselves of some of their stocks of the yarns for which inquiry had been made. The influence of these price fluctuations undoubtedly played some part in the attitude of buyers; and frequently during the month the need for something stabilizing as to prices was pointed out.

During the period, a number of floor-covering mills resumed operations, but the effect on the market from which their yarn is procured fell short of many expectations; it seemed that these particular mills were better supplied with yarns than was the general assumption, and that the market must wait for increased activity in other fields before a wholesale resumption of communication would materialize.

Prices given out for the Philadelphia market on October 9 follow:

Single Skeins.

4s to 8s	42	10s	43
12s	44	14s	45
16s	45½	20s	48
24s	50	26s	51
30s	52½@53		

Single Warps.

8s	44	10s	44
12s	45	14s	46
16s	47	20s	48½@49
26s	52	30s	53 @53½
40s	62		

Carpet and Upholstery Yarn in Skeins.

8s and 9s 3-4 slack	44 @44½
8 3-4 tinged tubed	40 @40½
8 3-4 hard white warps-twist	42 @42½
8 3-4 hard twist waste	40

Two-Ply Skeins.

8s	43	10s	44
12s	45	14s	46
16s	47	20s	48½@49
24s	50	26s	52
30s	53 @53½	40s	62 @63½

Two-Ply Warps.

8s	44½	10s	45
12s	46	14s	47
16s	49	20s	49 @50
24s	52½	26s	53
30s	54 @55	40s	63 @65

Frame Spun Carded Yarn on Cones.

8s	42½	10s	43½
12s	44	14s	44½
16s	45 @45½	18s	47
20s	47½@48	22s	48½
24s	49½	26s	50 @51
30s	53 @53½	40s	60
30s double carded			54 @55
30s tying-in			50 @50½

Two-Ply Combed Peeler Skeins and Warps.

8s to 10s			58 @60
20s	61 @63	24s	65
30s	68 @70	40s	77½
50s	85 @87	60s	95
70s	1.05	80s	1.15 @1.20

Mule Spun Carded Yarn on Cones.

10s	46	12s	47
14s	47½	16s	48
18s	48½	20s	50
24s	52	26s	54
30s	57	40s	67

Mule Spun Combed Peeler Yarn on Cones.

16s	53	12s	54
14s	55	16s	56
18s	57	20s	58
22s	59	26s	64
28s	65	30s	66
36s	68	40s	75

Link-Belt Company, 910 South Michigan Avenue, Chicago, have purchased the Meese & Gottfried Co., of San Francisco, Los Angeles, Seattle and Portland, and will utilize the distributing facilities effected by the consolidation, and the additional manufacturing equipment acquired, for serving the Pacific Coast trade.

P. T. Jackson Company, 55 Congress St., Boston, Mass., are sending out their 1923 edition of the chart showing 70 years statistical summary of cotton in the United States (from 1853 to 1923) and 40 years statistical summary of world's supply and distribution of all cottons (1884 to 1923).

Universal Rewound Filling Reduces Weaving Costs

INCREASE loom efficiency, improve quality of fabric, reduce waste, and lower production costs by preparing Filling Yarn for weaving on Universal Winding.

Spin to spinning limitations rather than shuttle capacity.

Spin warp and filling yarn with same size ring, warp bobbin filling wind, gain flexibility of spinning equipment and save doffing time and costs.

Preparing filling yarn for weaving by Universal Winding *is economical*—in every instance the total saving has exceeded the cost of preparation.

Write to our nearest office today. We will gladly prove the advantages and economies of Universal Winding.

LEESONA

UNIVERSAL WINDING COMPANY

Providence, New York, Chicago, Philadelphia, Charlotte, Utica,

BOSTON

Montreal and Hamilton, Canada

DEPOTS AND OFFICES AT MANCHESTER AND PARIS

UNIVERSAL • • • • • • WINDING

For Even Fabric

The hooks and cheeks must be "to size"—the overall lengths accurate, and the whole needle carefully finished if smooth, even fabric is to result.

Gauged and checked at every operation, "Excelsior–Torrington" Latch Needles show surprisingly small variation in every important dimension.

The TORRINGTON COMPANY
TORRINGTON CONN. U.S.A.

C. B. BARKER & CO., LTD.
140-144 W. 22nd STREET,
NEW YORK.

LOS FABRICANTES UNIDOS
964 CALLE BELGRANO
BUENOS AIRES

MANUFACTURERS SUPPLIES CO.,
CHERRY AND JUNIPER STS.,
PHILADELPHIA.

The Knit Goods Market

Cotton knit goods manufacturers distributing their product through jobbers have been selling at less than replacement value for so long that it seems they are doing so now from habit, and the unusual spectacle was presented last month of doing business on the basis of 20-cent cotton after the fiber for several weeks had been hovering in the neighborhood of 30. A hosiery mill using combed yarns owns a fair quantity bought at but seven cents a pound above the lowest quotation since the latter part of 1918, but is taking orders for delivery to January at prices which have been prevailing for the last six months. Before the yarn in stock has been consumed the mill will be obliged to place contracts and do what ought to have been done on a modest scale when the cotton condition report for August came out—make advances for averaging on its low price yarn and yarn at the market.

But the mill management say jobbers would not pay advances. As it is apparent they will do so eventually, in the event cotton holds at around October quotations, they would have paid at least compromise figures last month had manufacturers then taken the stand which they will have to take when they are putting high price yarn into their goods.

No one contradicts the theory that high prices curtail consumption. Curtailment has been only deferred. When it begins, if because of higher prices, mills will be in a worse position than if they had invited it in modified form by slight upward revisions when these were shown to be more than justified by the cost movement, for they will be left to cover the greater cost of new supplies and will be less able to obtain commensurate advances than they would have been in September and October had there been a show of such intelligent cooperation as was manifest among distributors.

The manufacturer body contends stocks are low among dealers, but they permitted the latter to operate in their own way, as though they believed mills were burdened with accumulations. Jobbers therefore own low price merchandise. Will they advance their prices when mills are forced, under new contracts, to advance theirs? History says they will, and take to themselves profits that belonged to mills which had made opportune yarn purchases, assuming a risk which 90 per cent of the distributors would not take.

Taking the state of business in cotton knit goods during the last two months as a criterion, the outlook for the remanider of the year is for a scrappy market and a trying situation for mills cramped for want of capital, and a probable scarcity of desirable goods for nearby deliveries.

It is apparent jobbers lack confidence, an attribute that would not be as conspicuous among manufacturers as if there were a better show of courage in distribution circles. The prospect is, many mills will prepare for the threatened curtailment and accumulate no stocks. Those that do pile up goods obviously will be, to a great extent, at the mercy of buyers.

Lacking confidence, there should be no keen desire to sell goods for distant deliveries, except for gilt-edge account. If the raw material markets maintain present strength, high prices will retard buying; if these markets break, cancellations will be as common as normal firm orders now are. In August, according to statistics supplied in the reports of a group of 29 Pennsylvania and nearby hosiery mills, there was an increase of over 250 per cent in cancellations as compared with the corresponding month for last year. It has been the experience of manufacturers that they sell low in a rising market and suffer losses in cancellations when it declines.

Hosiery mills selling direct to retailers, while feeling the effect of market disturbance, have had a more steady flow of business than those selling to jobbers, and reports from eleven such establishments in and around Philadelphia for August show an increase of only eight per cent in cancellations, in contrast with over 250 per cent for jobber mills in the same territory.

The retailer mills are having about the expected volume of repeat orders for Fall and are booking some business for Spring. Some interests predict that next year will witness a sharp battle between jobbers and direct-to-retailer manufacturers. With the entrance into this field of F. Y. Kitzmiller, for several years a part of the Taubel, Scott, Kitzmiller Company, it is regarded likely in some quarters that one or two important mills will follow. Both have been selling under their own nationally advertised trademarks to jobbers and are believed to be in as strong a position for going direct to retailers as was Mr. Kitzmiller after acquiring the plant and brands of the Notaseme Hosiery Co.

Hesitancy to operate freely in cotton goods may have been excusable after the freakish fluctuations in cotton on the day the ginning and crop condition reports for September were given to the public. A ticker advance of almost 100 points, followed by declines amounting to a net of 50 points for the day, was not calculated to inspire confidence in the stability of the market for the fiber, and during subsequent slipping the "I-told-you-so" buyer was more disposed than ever to hammer prices. But, pursuing his line of logic, he ought to have been pushing his way to the front for silk hosiery, for at that time raw silk was holding firm and there was no indication of approaching weakness. Outwardly, jobbers were as little interested in silk goods as though they were well stocked. That they are not is shown in their eagerness to acquire spot lots—at pre-earthquake prices. And such lots have been available.

A mill representative offered a Philadelphia jobber 30 dozens of ladies' full fashioned silk hosiery at the price the house had been paying, and promised delivery the following day. The jobber would have bought more on the same terms, but apparently the mill had about "sold up," for the salesman said 30 dozens were the limit. According to several jobbers, considerable silk hosiery is changing hands in this way.

Speaking in a general way, silk hosiery prices during October remained practically unchanged, a number of leading mills selling to the end of the year at the figures of August and earlier. Buyers were given the choice of two alternatives as to goods for delivery in the early months of 1924—they could buy at the current price plus or minus advances or declines in the value of the silk going into the stocking, to be computed on the date of invoice, or place firm orders at value to be determined on shipping date.

ABERFOYLE MANUFACTURING COMPANY

MERCERIZED YARNS

MAIN OFFICE
EMPIRE BUILDING
PHILADELPHIA

ADAMS-FRANKLIN BUILDING
CHICAGO

MILLS
CHESTER, PA.

WESTAWAY BUILDING
HAMILTON, CANADA

DIXIE MERCERIZING CO.
STRENGTH QUALITY
LUSTRE
CHATTANOOGA, TENN.

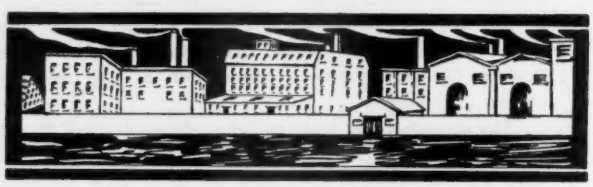
Mercerized Yarns

C. P. Mercerized Cones & Skeins
20/2-80/2 Natural and Gassed

DIXIE MERCERIZING CO.
CHATTANOOGA, TENN.

Chicago Office
817 Old Colony Life Insurance Building
CHICAGO, ILLINOIS

REPRESENTATIVES: Philadelphia, Pa., Cameron & Pfingst—Reading, Pa., Cameron & Pfingst—Canada, Slater & Co., Toronto.



Warren Soaps

Preferred Stock

The best quality tallow, palm, and red oils and olive foots, carefully balanced with the purest chemicals for your special purpose.

Uniformity guaranteed by test before shipment.

Warren Soap *Warren Service*

Warren Soap Mfg. Co.
Established 1870
77 Summer St. Boston, Mass.
Incorporated 1890

It was noted by a few manufacturers that numbers of their customers were taking advantage of the October prices and, presumably, buying to some extent for 1924, but for deliveries this year. They preferred to buy goods at a known price and carry them to speculating on the silk market, which seemed to be satisfactory to manufacturers well covered for supplies at the late August market.

While the silk situation operated to the advantage of certain classes of circular knit hosiery, the chief interest lay in the full fashioned, and output in this division is still being increased, notwithstanding for a time there were reports of distress stocks of full fashioned goods. The Brown-Phelps Hosiery Co., Philadelphia, selling to retailers, pushed installation of new machines immediately there were seen indications of a scarcity of full fashioned hosiery following completion of existing contracts with dealers, and by the end of last month had a part of the equipment in operation. Heretofore the company has been making seamless-knit cotton and silk hosiery exclusively, for men, women and children.

Although raw silk is costing manufacturers all of two dollars a pound more than prior to the alleged destruction of an estimated 35,000 bales by the earthquake, seamless silk boot stockings are being offered freely at former beggarly prices, and 260-needle goods were sold last month at a figure that will leave retailers with a substantial profit if they sell the stocking at the popular price of a dollar a pair. A jobber in North Carolina wired an order for a lot, to be delivered at once by express, and the shipment included ladies' sports ribbed mercerized and fiber boot stockings. Orders of this character are so common that the inference of low stocks among jobbers receives ample confirmation.

First among hosiery lines to go to higher price levels was the low end cotton, and by early October some manufacturers were holding 176-needle half hose for $1.20, an advance of about 15 cents a dozen from the year's low quotation. Looped toe goods were still to be had at $1.07½ to $1.10, however, with 144-needle socks being held at around a dollar a dozen for sewed toe. A few of the better established lines were commanding more money, having narrowed the gap separating them from the 176 with ribbed top. Automatic top half hose of the same number of needles were moved up from 82½ to 85 cents for sewed toe, in paper box packing, after selling for some time at 75 cents in bundles. One difficulty in getting an adequate price for low end carded goods lies in the fact that even a slight upward revision is regarded by retailers as taking them out of their price range at the counter.

It is the experience of some sellers that the larger orders for cheap cotton hosiery, coming from leading jobbers, call for the better classes of goods, but where one such order is placed there are three for the sub-standard, for which there is a good outlet among jobbers catering to retailers in the East Side class. Small lot buyers have been moving such types in great quantities and getting far better prices, relatively, than jobbers are paying or receiving.

There is no intimation of accumulations of low price cotton hosiery among manufacturers, except as to misses' 28-ounce ribs, which in the circumstance did not share in the general per cent advance on cheap goods. Some of the mills making the coarse ribs have curtailed production, for escaping what happened to them in 1920, when warehouses were full to overflowing, and it seems likely that surplus stocks will be about absorbed before there is any material speeding up of production.

While low end ribs have not had a brisk market, sales of fine gauge combed have been quite satisfactory to manufacturers, many jobbers having bought as usual for Spring, at very favorable prices, as leading mills had bought yarn to cover normal requirements. The lowest price paid for 18s combed peeler in the last three months was, it is believed, 45½ cents, and combed ribs were priced originally on about that basis and up to 50 cents for the current season's sales. Later, some mills found it expedient to take their lines off sale for a time, restoring them at slight advances. As often happens when buyers turn bears, the early comers got the bargains. Two southern mills are quoting $1.80 and $1.85 respectively. Contrary to expectations of many persons in the trade, sales of misses' fancy ribs have not appreciably affected the movement of the plain combed and mercerized. Fancies have been bought freely for next year, at about last year's prices, but more than one-half the business in this class remains to be done. As the novelties are in good demand and production of the more desirable patterns is confined to a comparatively few mills, it seems certain future sales will be at higher prices.

Strong sellers in children's ribs are fancy top seven-eighth lengths. One mill has demand in excess of production, and offers to contract for the manufacture of 600 dozen legs a day, the tops being knitted on Brinton machines of comparatively recent model. The patterns of the tops are different from anything heretofore shown, and while they are of like design there is an extreme of variation in the color schemes, no two manufacturers employing the same color combination except that of one mill may be copied. The several mills booking the big business in this class of ribs are those whose color creations strike the popular fancy the more forcibly.

Repeat orders for infants' socks are being received from jobbers who at the time they placed their initial orders admitted they were being held in check by their merchandise heads. Western houses who have offered the socks to retailers are understood to have booked fair business and therefore have had encouragement for duplicating.

A wide range in quotations on ladies' artificial silk and tram silk boot hosiery is seen, indicating an attempt to accommodate buyers who are more influenced by price than quality. Hosiery in this fabric combination is to be had at almost anywhere from $5 a dozen to $7, putting it in the 75 cents and dollar retail classes. One establishment is sold well ahead at $5.85, for a stocking that compares favorably with the average dollar a pair article, and it is stated that is what retailers are getting for it. One of the larger mills is quoting $3.47½ for 18-inch fiber boot stockings. Its prices on a few of its other lines are $1.20 for 2-pound automatic top 84-needle half hose; $1.12½ for 176-needle looped toe socks; $1.85 for cotton top mercerized socks and $2.32½ for 220-needle full mercerized; $2.47½ and $3.05 for ladies' mercerized of 220 and 240 needles respectively, the 220 showing an advance of five cents a dozen. The same mill quotes $1.10 for misses' 28-ounce ribs, rise 7½ on size seven and fall five cents, an advance of 2½ cents; $2.15 for 3-pound ribs, rise 10 cents from size eight and fall five cents, and $1.80 for misses' 320-needle combed ribs, rise 10 cents from size

GRANITE STATE LATCH NEEDLES

GRANITE STATE LATCH NEEDLES have won their enviable position by consistently making knitting machines run more smoothly with fewer interruptions. They do their work perfectly, never fraying the yarn, because they are made with painstaking care and exactness with no rough latches or rivets, everyone uniform, tempered for maximum resiliency and strength, and finished to a satin smoothness. The large number of satisfied users is ample indication of the confidence the knitting industry has in Granite State Latch Needles.

Ask for samples.

GRANITE STATE NEEDLE CO. LACONIA, NEW HAMPSHIRE

seven and fall five cents. Prices are for deliveries to March 31.

A better than a high average 144-needle sock is quoted at $1.45 by a manufacturer who states that in increasing the price five cents a dozen the sock was improved by more than that sum. The sock weighs about 24 ounces to the dozen pairs. A one-pound sock of 144 needles is offered at 92½ cents for sewed toe. More jobbers, especially in the smaller class, buy the sub-standard 144-needle goods, while the larger establishments take chiefly and in greater quantity of goods around $1.05 and thereabouts.

Mercerized half hose can be sold in fair quantity if built to fit a price. A southern mill is quoting $2.32½ for 220-needle and $1.85 for the cotton top variety, these being intended to compete with combed socks, selling around $1.75 a dozen for single sole. Sales of the latter have been very large, and several mills are sold up as far as they are willing to sell at the current price.

Ladies' mercerized continues draggy, prices for 220 needle varying from around $2.35 to $2.50 for the more common standard types. One mill is asking $2.47½, 10 days net; others adhering to $2.50, 30 days net. At the latter figure one mill is selling at 10 cents a dozen less than a year ago. Another is getting 15 cents more for one line of misses' mercerized ribs and is quoting last year's price on another.

Prices are an enigma to every market operator. A southern line of ladies' artificial silk boot stockings is offered to jobbers at $3.50 a dozen. A northern manufacturer who has looked it over carefully says he could not build a better fiber boot article at less than $4. Dealers are getting the lowest priced goods, relatively, in many years, and by various means. It is stated that a considerable order for silk, silk-and-fiber and mercerized in combination with fiber was placed for a syndicate of southern jobbers, whose identity is not being revealed. Correspondence discloses the character of the syndicate order and confirms the report of cooperative buying, of which, it is predicted, there will be more.

A commission house here and there dealing in a general variety of hosiery lines is selling for spot only and giving no intimation as to when prices for futures will be named. One such establishment is offering, but not selling extensively, 176-needle looped toe half hose at $1.15, which is slightly above some quotations; 144-needle socks at $1.02 for looped toe and 95 cents for sewed, and 87½ cents for automatic top full seamless, sewed toe being available at five cents less. This house is offering no silk goods, its mills all having taken their lines off sale for the time. A Philadelphia mill is suggesting that selling agents and commission houses advise their customers to buy silk hosiery for only a few weeks requirements, expressing the opinion that by December the raw silk market situation will have been so clarified that it will be safer to operate for futures.

A class of dealers that is compelled to operate in hosiery regardless of the price trend is embraced in the catalog houses. These establishments, in the preparation of their catalogs, which will not reach the public inside of a month after being printed, obviously must make ample provision for goods well in advance of sales. One of the larger houses in this class some time ago bought about 10,000 dozens of ladies' full fashioned silk hosiery from a distress lot and catalogued the stockings at 89 cents

a dozen, which was less than the cost, at the time, of goods bought in the regular way. They were used as a leader, and the house was flooded with orders, until eventually it became necessary to replenish the stock. By that time the earthquake had become a matter of history, and there were to be had no more full fashioned silks to sell at 89 cents and leave the seller out whole. Catalog houses got goods at sacrificed prices which jobbers were passing up.

At present writing it looks as if probably the keenest competition ever experienced will be witnessed among hosiery mills selling to jobbers. This is likely to continue throughout the year and drag into 1924. There are mills that are operating simply to break even on their overhead. This is going to be reduced in many mills, and in a general way the consuming public will pay no higher prices.

"We cannot get advances," says the sales manager of one large mill; "retailers will not attempt to get more than the prices at which they have been selling certain classes of staples. When we find we can no longer sell a line at a price which retailers are willing to pay we will discontinue making it and bring out something else to go over the counter at the same price. We've gone through more than one such campaign as we now are having and are not going to try to force any one of our lines into a higher price range. The public is not so antagonistic to advances in intrnisic value as are jobbers and retailers, but as the dealers control the price situation it may be assumed that, as prices cannot be put up, quality will be brought down or, at the best, much hosiery will be made from formulae different from those which ordinarily are followed."

Immediately following the protracted cold weather which arrived about the end of September, a few weeks ahead of schedule, jobbers began calling for more heavy weight underwear. They had been shipping out actively to retailers, some of whom were quick to place repeat orders. By the middle of October there was demand for deliveries that could not be met. Jobbers, in some instances, had sold before covering. This was disclosed in the character of some of the orders. One, for approximately 1,200 dozens of suits and separate garments, placed on October 6, called for immediate delivery. It was thought at the mill the jobber would be fortunate if his house received the goods by the middle of November.

"We have nothing to sell for deliveries before November 15," it was stated at a mill having a big run on substandard cotton ribbed Winter underwear. Several mills were similarly situated. Jobbers had waited too long, so far as related to deliveries, but in the main they were able to contract for late deliveries at about the prevailing prices.

A mill selling at prices named in July is swamped with orders for immediate delivery and some buyers, rather than agree to shipment in November, were still deferring their repeat orders. There have been few bona fide advances on heavy weights. Occasionally a mill whose line must be carried because well established can get 50 cents more a dozen for shirts and drawers and a dollar more for union suits for desired delivery. A Central West manufacturer in this class is getting moderate advances on both Winter and Summer goods, and jobbers pay them, under protest, but they cannot discontinue the lines except at the risk of disturbing a considerable number of retailers, and it is a question whether they can pass the advances along to their customers.

By the middle of October last year business in heavy weight cotton ribs was being booked at specially named prices for deliveries in the first quarter of 1923, and formal opening of all lines was being discussed generally. To date there has been scarce an intimation of when prices for the Winter of 1924-5 will be made. If the present market situation shows no material change in the next six to eight weeks, it seems probable the opening will be deferred until January. There would be no incentive for manufacturers to quote for deliveries six months hence while jobbers were restricting their purchases for filling in, determined to force lower prices.

A jobber from the Far Northwest who chanced to be in the office of a mill in the East early in October made inquiry as to prices for the next succeeding Winter season, and it is stated he placed a tentative order for 100 cases of cheap garments. The seller could not name a price, but stipulated that on goods shipped out during January, February and March the price would be on the basis of a stipulated per centum under the quotations at the opening for the next succeeding three months, the goods to be paid for in ten days from date of invoice.

Jobbers bought sub-standard cotton ribs as early as last October for shipment in the first quarter of this year, and are understood to have made a quick and profitable turnover. The early purchases, it is stated, showed the best return for the year. With the cotton market seesawing from day to day it is believed there will be little buying this year for the first three months of the next. In fact, every manufacturer and jobber is more interested in disposing of current production than figuring on business for 1924, and no one believes there is going to be any momentous carryover for either mill or distributor. Stocks are low among jobbers, who show not the slightest interest in goods for anticipated requirements. Every sizeable repeat order now means there was selling short of goods.

Some underwear manufacturers and commission houses say business with them is quite satisfactory; the rank and file declare that at the best the situation is so confusing as to be very unsatisfactory, this applying to both heavy and light weights. Taking an average of the estimates of the purchases for next Spring and Summer, probably 40 per cent of jobber requirements remain to be contracted for. Men's garments are being bought where they can be picked up at low prices. Buyers are in revolt against prices based on current cotton values. They would buy more bal briggans right away at opening prices, for deliveries next year, and here and there slight advances have been paid, for somewhat distinctive lines. Run-of-mine goods are causing no excitement among buyers.

This year, as well as in 1922, the production of ladies' light weight underwear was carried beyond market requirements. In the first place, there was too much machinery in operation for taking care of normal needs under conditions as they existed several years ago, before the silk garments became as popular as silk hosiery. Now there is a much lessened light weight cotton underwear clientele, and not a few manufacturers of ladies sub-standard cotton garments have stocks for which there is no profitable outlet. In Pottsville, Pa., alone five underwear mills are offered for sale. More than that number in that district have been idle half of the time since last January, and as

many doubtless will be out of business entirely by next January. The direct-to-retailer mills and the catalog houses have cut a wide swath in the business of mills making ladies' light weight cotton underwear, and the hole is being broadened by the more general use of the flimsy silk shirts and suits.

Sweater manufacturers now are having fairly brisk business, some being pushed to capacity operation in meeting the ever-increasing demand for the popular brushed wool garments. For several months jobbers were practically out of the market. Recently all have been after more goods. Retailers bought late; now they are buying more than they ever thought they could sell. The popularity of the so-called brushed garments saved the sweater industry from a perilous Fall.

Among the Knitting Mills.

The Mitchell & Frank Knitting Mills, Inc., Main Street, Buffalo, N. Y., is planning for the erection of a new plant at Woodlawn Avenue, near Kehr Street, to be three-story and basement, 75 x 200 feet. The equipment installation will be arranged at an early date. L. Honnecker is president.

The Perry Knitting Co., Perry, N. Y., has perfected plans for extensions at its mill, to include the construction of a new power plant. The new structure will provide for the housing of all present steam and electric equipment under one roof, and the installation of additional apparatus.

Morris Starrels & Co., Philadelphia, Pa., will soon commence the construction of a new addition to their knitting mill on Dakota Street, to consist of a two-story building, 23 x 90 feet. Alterations and improvements will also be made in the present plant.

The Rockdale Knitting Mills, Inc., New York, N. Y., has been organized to operate a local plant. The company will start with a nominal capital of $10,000. It is headed by S. Mantell, I. Stahl and S. Leesing, and is represented by A. J. Herricks, 99 Nassau Street, New York.

The Master Knitting Corporation, New York, N. Y., has been formed with a capital of $20,000 to manufacture hosiery and other knit goods. It is headed by A. and A. Feketis, and A. Glatt. B. Rogers, 305 Broadway, New York, is representative.

The Colon Knitting Co., 135 Madison Avenue, New York, N. Y., has leased space in the building at 148-50 Madison Avenue, for proposed extensions.

The Harris Knitting Mills, Inc., Philadelphia, Pa., will make alterations and improvements in its plant on Wakefield Street, for increased production. A general contract for the work has been let.

The S. S. Miller Hosiery Mills, Inc., Reading, Pa., recently organized under state laws with capital of $750,000, will take over and expand the local knitting mill of the company of the same name. Harry M. Peiffer has been elected treasurer of the new company.

The Montello Knitting Mills, Inc., Montello, Pa., has preliminary plans in progress for the rebuilding of the portion of its local mill, destroyed by fire recently, with loss estimated at about $20,000, including equipment.

The Topton Hosiery Mills, Topton, Pa., have construction under way on a new addition for increased capacity, and plan to occupy the structure at an early date.

The Campbell Hosiery Co., London, Ont., is considering plans for the rebuilding of the portion of its local plant, recently destroyed by fire with loss estimated at about $22,000, including equipment.

The Hillside Knitting Co., Needham, Mass., has arranged for the operation of a local mill in the building at 232 Hillside Avenue, and plans to provide equipment for maximum production.

The Jones Knitting Mills, Inc., Los Angeles, Cal., recently organized, is perfecting plans for the operation of a local mill for the manufacture of a line of knit goods. The new company has been capitalized at $50,000, and is headed by E. H. Jones and James C. Carrier. It is represented by Stewart, Stewart & McMurrin, Hibernian Building, Los Angeles.

The Bear Brand Hosiery Co., Waupun, Wis., has commenced the construction of a new addition to its plant for a general increase in capacity, estimated to cost about $45,000. It is proposed to arrange for the equipment installation at an early date. Lockwood, Greene & Co., Chicago, Ill., are architects and engineers, and will be in charge of the machine installation.

The evolution of power from almost the beginning of history up through the centuries to the modern present-day methods is most interestingly traced in a booklet recently issued by the Morse Chain Company, Ithaca, N. Y. This booklet, which comprises an address delivered by F. L. Morse before the American Mining Congress, is a valuable contribution to literature on this important subject. Mr. Morse points out that from the beginning of history, the growth or degree of civiliation of a race or nation can be determined by their development and application of power transmission and the utilization of the sources of power; and points out that invariably the rise and fall of races, empires and nations, followed the improvements and inventions for the utilization of power in mining, manufacturing and transportation.

Mr. Morse, in his address, outlines the development of power from the 17th dynasty up to the present period, beginning back with the crude devices of ancient Egypt and Greece, up through the Roman empire, the Middle Ages, the work of Leonardo da Vinci in the 14th and 15th centuries, through the 16th, 17th and 18th centuries. The industrial revolution occurring in the 18th and 19th centuries is described, with the development of Watt's steam engine and the use of belts and linked chains. From this the development of the rocker joint on the silent chain, invented by Morse in 1901, is traced, and the latter portion of the brochure deals with the application of this method of power transmission, and how it has developed within the comparatively short period of a little more than a score of years.

The booklet is replete with interesting illustrations going back as far as 3000 years B. C., and these, with the great volume of historical data, indicates an enormous amount of research and investigational work on the part of the author. The thread of the evolution of power is maintained in clear and interesting continuity of facts and events—and the entire work is most interesting and informative. Copies of the brochure may be secured upon application to the Morse Chain Company, Ithaca, N. Y.

Georgia Cotton Manufacturers Hold Meeting.

(*Continued from page* 26.)

suffering from taxation are due to local taxes imposed by counties and municipalities." In illustration of this, Colonel Swift cited the fact that in a year there was raised in Georgia the sum of $150,000,000 for state, municipal, county, and Federal taxes; and that out of this total, the state, through its five mills rate, received only $5,256,000. He further pointed out that the average county tax rate in Georgia last year, including taxation for public schools, was approximately $17 per thousand, which, with a state rate of $5, and an average municipal rate of approximately $10, made a total of $32 as an average tax, out of which only $5 went into the treasury of the state.

Another enormous defect in the present system pointed out by the speaker was the administration of the tax, which the speaker said is very ineffective. All power of the state tax commissioner to deal with individuals making returns improperly has been taken away, he declared, and the whole proposition left up to local officials, "who are elected by the people and who have no desire to antagonize their constituency by bringing pressure to bear upon taxpayers of known wealth who make incorrect returns."

Colonel Swift said he was opposed to the classification tax because he is afraid that the legislature would be unable to properly classify property, even if such an amendment should pass at the polls, of which he expressed doubt. The sales tax he opposes because, he declared, "if you make provision for the sales tax, which in its true theory should apply only to retail sales, it would not be long before some man will try to extend the provision to make the tax apply to jobbers' and manufacturers' sales as well," and this, he pointed out, would be unfair and would work a handicap on the manufacturers and jobbers competing with other industrials in other states.

The speaker then presented the suggestion outlined at the beginning of this report, and in conclusion urged the business men of the state to approach the question in an unselfish manner, "for the best interests of the state, in the spirit that we will finally get something evolved from this discussion which will be wise in its moderation and just, because it is equitable and modern."

Some discussion of Mr. Swift's suggestion was held after the conclusion of his address. At the end of this discussion, President Glenn requested the sense of the body as to recommendations of the Association for the tax commission working on this problem, and it was unanimously voted to leave this matter to the discretion of the president and secretary.

The boll weevil was next discussed, a paper being presented on the subject by W. G. Nichols, general manager of the Griffin Manufacturing Company, Griffin, Ga., who said in part:

The speaker regrets his appointment as a leader in the discussion of the boll weevil eradication as he is neither a cotton planter nor familiar in detail with methods of cotton raising and in accepting his appointment is only going to give a few suggestions which may serve as a basis for further discussion and bring out some suggestion of something that may be done by our organization that may be beneficial to the mills.

Our secretary has divided the topic into four divisions: First, the need; second, what is being done; third, what other organizations are doing; and fourth, what the cotton manufacturers can do.

First, the need. The boll weevil first crossed the border line and began its ravages in the United States in 1892—about thirty years ago. For the first fifteen years its work was confined mainly to Texas. During the last half of the thirty year period, however, it has spread very rapidly and in 1922 only 4.01 per cent of the cotton crop was raised outside of the infested area. This territory, free from the weevil, was mostly in Northwestern Texas and Oklahoma and small districts in Tennessee and Virginia.

The loss of cotton crop due to the weevil varies greatly according to the season and the portion of the territory under cultivation. In 1921 over 45 per cent of the crop is the estimate of the damage in the state of Georgia and the damage over the whole cotton belt at about 31 per cent. This high figure was an exception however. Varied conditions of season and weather throughout the belt usually react so that a low condition in one section is offset by fair to good conditions elsewhere, but in 1921 adverse conditions of various kinds prevailed in almost all sections. The worst feature of the boll weevil menace lies in the fact that it adds another element of danger to the crop and makes for increased variations in the crop. In 1918, the percentage of loss of crop due to the weevil was only 5.83 per cent although the infestation at that time had reached into South Carolina, but in 1921, as already stated, the loss was 31 per cent of the crop over the whole belt. This shows the possibilities of extent to which the crop may be affected and a circumstance that aggravates the danger from the weevil is the fact that weather unfavorable to the crop in the form of excessive rains is also favorable to increased ravages of the weevil.

Looking at it from another viewpoint, that is, at the value of the normal yield destroyed by the weevil taken at current farm prices the loss due to the weevil in 1910 was: In 1921, $610,000,000; in 1920, $400,000,000; in 1919, $570,000,000; in 1918, $230,000,000; and it is manifest that the loss in value depends upon other factors than the extent of the ravage of the weevil, from the fact that in 1921, while almost one-third of the crop was lost through the weevil, the money loss was less than three times what it was in 1918 when the percentage of the crop lost was less than one-fifth what it was in 1921. The higher price in 1921 made up for the greater loss of crop.

In closing this part of the discussion, we shall keep in mind the fact that the cotton crop is not given over entirely to the boll weevil and it is quite possible, under favorable conditions, to raise a substantial percentage of a normal crop.

In Texas in 1909, the percentage was	12.10
1911	.90
1916	18.53
1918	4.43
1921	33.66

Second: What is being done? It would seem that everything is being done that is humanly possible. For many years entomologists have been studying the weevil and his habits and seeking some method of control. It is possible that they may yet find some parasite or some form of bacteria which may be a large factor in destroying the insect, but the conditions under which the weevil breeds and the hidden nature of its work make the problem a difficult one for the scientists. Furthermore, the Department of Agri-

culture of the United States and the Agricultural Colleges and Experiment Stations of the various states have been seeking methods of cultivation and control without much success while the cotton planters have done everything themselves they could think of.

Locally, the most effective prevention of the work of the weevil seems to lie in what is known as the Florida method which has been pursued with considerable success by some of the progressive farmers near Griffin. This method calls for carefully ascertaining when the weevils have completed their emergence from their hibernation and begun active work. This data precedes the maturity of the plant. All the squares, including the infected ones which may have fallen to the ground, are picked and a small amount of poison is applied to the central bud. Picking the squares destroys the eggs, and putting the poison in the bud kills most of the remaining weevils and the planters may, with a good degree of confidence rely on the later bearing of the plant for his cotton crop. Picking the early squares will stimulate to some good degree the later growth of the plant.

Third: What other organizations are doing. The limited time at my command has not given me opportunity to learn much on this point. Most of us have probably seen reports of the efforts of Mr. Wanamaker to stimulate cultivation under various methods, but it is rather early to gather reports for this season.

Fourth: What the cotton manufacturer can do. As far as I can see, nothing except to influence the local cotton growers in adopting and spreading the most improved methods of raising cotton under boll weevil conditions and there is a point of view which seems to me has not received sufficient consideration. To use a phrase that was current some time ago: "Are we sure that any guy has actually put Evil in Weevil" or whether, as manufacturers, we have not taken over the viewpoint current among the planters who have been discouraged trying to raise cotton under the conditions which are still adverse to them because they have not yet found the best methods of weevil control.

From the manufacturing standpoint, I think that we will all agree that conditions are more favorable to profitable operations when cotton costs 20 cents than when it costs 7 cents per pound. The average price of cotton for fifteen years previous to 1916 was not far from 11 cents. For some reason, or rather for a variety of reasons, since 1916 the cost of cotton has varied greatly but it has not for any lengthy period gone below 20 cents. It has grown to be the opinion of some cotton planters that it is better for them to raise cotton under weevil conditions at 20 cents than it would be under the old conditions at 11 cents.

At the conclusion of Mr. Nichols' talk, adjournment was taken.

Most of the operating heads of Mexican knit goods mills are foreign, with Spaniards in preponderance; though it is stated that most of the present generation are mostly Mexican born and may be considered as essentially Mexican in character.

You cannot turn a 'possum into a watch dog, because he believes in a policy of going to sleep at a critical time. Careless men have a brain somewhat similar to a 'possum.

Justice the Keynote.

That justice must be the controlling factor in all successful human relations was recently pointed out by J. H. Tregoe, who discovers among publicists and theorists an attitude of criticism toward capital; a tendency toward the belief that capital has been disposed at all times and in all seasons to exploit labor. However, the question readily suggests itself whether labor would not be disposed to exploit capital, and do so relentlessly, were the present capitalistic system destroyed?

"The real trouble of the world today is a moral trouble. A large portion of our people have lost all conception of what it means to render adequate service in return for the wages they are paid." This recently expressed opinion by a student of economics indicates that, instead of castigating capital and endeavoring to change our methods in a sentimental belief that we will then have a millenium on earth; that instead of believing the capitalist is always a hard-hearted fellow; that capitalism does not afford equality of opportunity or the conservation of individual rights; we could more profitably recall what has been accomplished in recent years through the wide-spread distribution of securities among the masses and urge the doctrine that every worker should be a capitalist, and every capitalist a worker.

Keeping away from foolish ideas and concentrating all efforts on the conservation of justice in human relations, with the proper subordination necessary for stable and permanent government, with a moral force actuating all men to do their best and to give value in return for value received—this is the spirit that will bring industrial success and, at the same time, help to strengthen and preserve the foundation of the nation.

The 1923 edition of the "American Directory of the Knitting Trade" has been issued. A review of its pages shows many important changes and additions in the various branches of the knitgoods industry. An addition of more than one hundred mills to the list reported on in the previous edition is noticeable. All mill reports have been brought up to date and have been carefully revsed. An addition of interest in this edition is the listing of mills manufacturing knitted fabrics for overcoatings, suitings, cloakings, etc.

Other sections of the directory show lists of cotton, woolen, worsted, silk and artificial silk yarn manufacturers catering to knitting mills, as well as a list of commission dyers, bleachers, printers, finishers, etc., making a specialty of handling knit goods. Manufacturers' selling agents and commission houses representing the various mills are also listed with details as to goods handled. Jobbers, department stores, large retailers and others handling knit goods, including New York buyers for out-of-town jobbers, are listed separately; as are export houses in New York and London; London agents and importers; Great Britain jobbers and wholesalers; knit goods associations, and a convenient index of machinery and supplies.

The directory also contains a special section devoted to listings of manufacturers and cutters-up of woven cotton or athletic underwear such as nainsook, cambric, muslin, etc.

Bragdon, Lord & Nagle Co., New York City, are the publishers. The price per copy is $2.00.

Sandoz
ANILINE DYES
SANDOZ for ALL TRADES

We carry a complete line at all branches.

For samples and prices apply at any of our offices.

SANDOZ CHEMICAL WORKS
INCORPORATED
238-240 Water St., New York — 12 S. Front St. Philadelphia
126 Market St., Paterson
Commercial Bank Bldg., Charlotte, N. C. — 36 Purchase St., Boston

Turning "Mill-Night" Into Day
Labor Costs Cut 80% with the
DeVilbiss
Spray-painting System

IN THE same degree that it is important and profitable to paint your mill walls, you will find it likewise advantageous and profitable to do that painting the DeVilbiss way. The DeVilbiss spray gun makes possible 4 to 5 times faster painting than the hand brush, and insures a more thorough and uniform, greater light-reflecting and longer wearing coating. The same equipment can be used in mill exterior and mill house painting.

A line from you will bring further particulars about the DeVilbiss System it will pay you to have.

The DeVilbiss Mfg. Co. 258 Phillips Ave. **Toledo, Ohio**

AUTO GYP
Process of Dyeing

STOP BLEACHING

With the AUTO-GYP process of Dyeing, bleaching is ABSOLUTELY UNNECESSARY.

How would you like to put your raw unbleached product through a process where it would come out already perfectly bleached and uniformly dyed, in only three hours time? This is exactly the result you obtain when using AUTO-GYP.

You can readily realize the great saving that can be effected by the elimination of the troublesome bleach. You save all the chemicals used in the chloride of lime method of bleaching by substituting AUTO-GYP. AUTO-GYP is not a new process, but a proven method of dyeing goods WITHOUT bleaching. Dyeing and finishing plants all over the country are rapidly taking advantage of the opportunities that AUTO-GYP offers.

AUTO-GYP can reduce your dyeing expenses amazingly. It not only saves considerable time, but it saves steam, labor, eliminates boiling out in kiers or other appliances, reduces shrinkage, and produces a fabric with a softer "feel."

Let us prove our claims to you, right in your own mill, under your own conditions, and on your own goods at OUR EXPENSE.

Write us at once.

Surpass Chemical Co.
Albany, N. Y.

DYES — AUTOGYP — BLEACHES

One Minute!!

Take one minute to read this message!

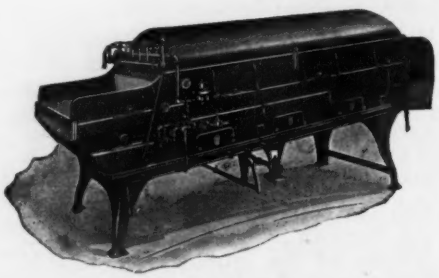
ONE MINUTE is all the time required to restore the proper degree of moisture and thoroughly and uniformly condition your yarn with the SARGENT Yarn Conditioning Machine.

No more "Kinky Filling"—a thorough, accurate and rapid conditioning of your filling yarn.

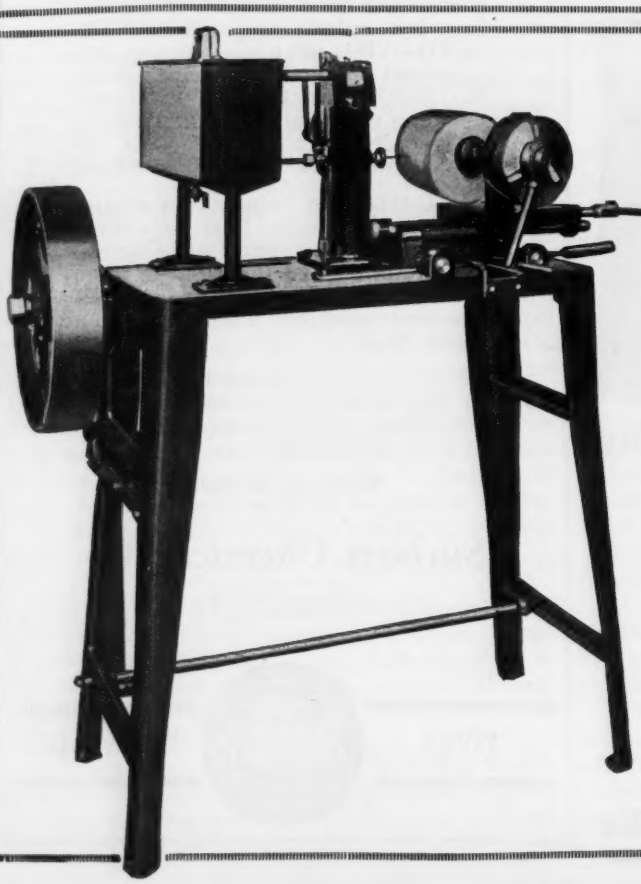
There's a reason why so many mills use the SARGENT!

C. G. SARGENT'S SONS CORPORATION, GRANITEVILLE, MASS.

Fred H. White, Southern Agent, Charlotte, N. C.



SARGENT
YARN
CONDITIONING MACHINE



INJECTS THE DYE INTO THE CONE UNDER PRESSURE

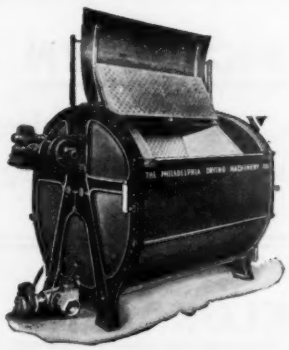
ECLIPSE
VAN NESS
DYEING MACHINES

Random Dyes Cotton, Wool or Silk Yarn on the Cone. WRITE US!

ECLIPSE TEXTILE DEVICES, Inc.
Elmira, N. Y.

MAKERS OF
ECLIPSE AUTOMATIC YARN CLEANER
AND ECLIPSE AUTOMATIC
STOP MOTION.

HURRICANE



ALL MONEL DYEING MACHINE

This machine represents the latest development in the Hosiery Field. The tub and cylinder both being constructed of monel, permits easy cleaning of the machine and also allows the dyeing of various shades of colors.

The well-known "Hurricane" type of pocket and reversing mechanism is embodied in this machine as in our various other types. Built in 50 to 300 pound sizes.

Send for Bulletin RD-2 for further details.

Dyeing, Bleaching, Drying and Finishing Machinery for Hosiery.

The Philadelphia Drying Machinery Co.

Office and Works: 3351 Stokely St. **Philadelphia, Pa.** **Boston Agency:** 53 State St.

DURABLE K-W UNIVERSALLY USED

KLAUDER - WELDON
DYEING - BLEACHING-SCOURING MACHINERY

There are K-W machines in use which were built nearly half a century ago and which are still doing their work efficiently and economically under severe service. This is sufficient evidence of the durability and capability of K-W machines after long years of subjection to the ravages of live steam, heat and alkalis.

K-W machinery, by its accomplishments, has steadily and irresistibly built up a reputation that has made the name "Klauder-Weldon" synonymous with the "world's best dyeing, bleaching and finishing machinery."

Our interest in upholding the K-W reputation means that you MUST be satisfied, and our suggestions to prospective purchasers are made with the view toward solving any dyeing, bleaching or scouring problem for all time. We will be glad to answer any and all questions without obligation on your part whatsoever.

Write today for K-W Literature

THE KLAUDER-WELDON DYEING MACHINE CO.

Bethayres, Pa., U. S. A.

H. G. Mayer, Southern Agent,
Realty Bldg., Charlotte, N. C.

The TEST of TIME

BIBB MANUFACTURING COMPANY
COTTON SPINNERS
MACON, GEORGIA

December 29, 1922

The Fletcher Works,
Philadelphia, Pa.

Gentlemen:

We have your letter of the 26th with reference to Hydro Extractors purchased from The Schaum & Uhlinger Company of Philadelphia.

Two of these machines have been in constant operation for more than thirty years; two of them for about eleven years and six were installed in the year 1917.

These Extractors have given perfect satisfaction in every respect and stood up splendidly even during the extreme strain and rush of the period of the world war.

Our people are very much pleased with these Extractors - they are the only kind we have in our plant.

Yours very truly,
BIBB MANUFACTURING COMPANY,
Vice President.

Year after year FLETCHER EXTRACTORS have been rendering satisfactory service to manufacturers the country over. Built to endure, Fletcher Extractors meet the most exacting requirements of modern efficiency in production.

For fifty-nine years we have been building all types of extractors. Our experience assures you of an efficient, satisfactory and dependable installation.

Circular with protographs and full detailed description sent upon request. Write for your copy.

FLETCHER WORKS

Formerly SCHAUM & UHLINGER

Glenwood Avenue at Second Street

PHILADELPHIA, U. S. A.

Chicago, Ill. *Los Angeles, Cal.*
Boston, Mass. *San Francisco, Cal.*
Charlotte, N. C. *Portland, Ore.*

Perfect Insulated Dryers

MILLER SYSTEM

Twenty-Five Years of Successful Operation

Automatic Truck and Tray Type Dryers for all textile fabrics. Drawn Steel frame members uniform in size, not formed by a break. The only dryers carrying 85% Magnesia insulation, which is the highest grade insulation manufactured. All joints between the frame and panels that form the inclosure are air sealed. This improved patented construction is found only in the Miller Dryers.

The story will be told in detail if you are interested.

Correspondence Invited

DRYER CORPORATION OF AMERICA
GENERAL OFFICES AND PLANT
Warren, Ohio

Uniform in Application

VICTROLYN

Penetrating, Lubricating, Dependable Assistant in Warp Sizing

KLORASENE

will remove Oil Stains.

If you are troubled, write us.

BOSSON & LANE

Manufacturing Chemists

ATLANTIC, . MASS.

Turns out absolutely uniform work—

the Automatic Timing Device sees to that. You determine the time each load shall be extracted, then your operator has only to load the basket and pull down the safety cover—the HUMATIC does the rest. Other features save you time, labor and power. Have us send you full information—write today.

The American Laundry Machinery Co.
Specialty Dept. C, Cincinnati, Ohio

The Canadian Laundry Machinery Co., Ltd., Toronto, Canada. American Laundry Machinery Co., Ltd., London, England.

Automatic Safe!

Tycos
temperature instruments

HUMIDITY

Keep an exact record of your humidity condition by installing *Tycos* wet and dry bulb recorders.
Specific information given on this instrument or any other *Tycos* Temperature Instrument. Write today.

Taylor Instrument Companies
ROCHESTER N.Y. 858
There's a Tycos or Taylor Temperature Instrument for Every Purpose

"ARTCO" SILK OIL

for

use on **Artificial Silk**

Hosiery and Sweater Knitters find "ARTCO" Silk Oil to be the best product for this purpose.

Prevents waste and saves time

Softens the Thread and lays the Fibre, and produces a Fine Lustre.

Samples and full information on request.

Manufactured only

by

QUAKER CITY CHEMICAL COMPANY

Broad and Lehigh Ave.
Philadelphia

"BRETON"
MINEROL "F"

For
Cotton
Print Goods

"It softens uniformly the blotch"

BORNE, SCRYMSER CO.

Established 1874

17 Battery Place, NEW YORK

BOSTON PHILADELPHIA

Works: Elizabethport, N. J.

Established 1815

ARNOLD, HOFFMAN & CO., Inc.

Providence New York Boston Philadelphia Charlotte

All Kinds of
HEAVY CHEMICALS
Sole Agents for
BELLE ALKALI CO.
of Belle, W. Va.
Manufacturers of
LIQUID CHLORINE
BLEACHING POWDER
CAUSTIC SODA
Solid and Flaked

We solicit your inquiry for prompt or future delivery

Rohm & Haas Company Inc.

Manufacturers of

CHEMICALS

PHILADELPHIA, PA. BRISTOL, PA.

SODIUM HYDROSULPHITE—
Sulphoxylates and Allied Products.

LYKOPON—Sodium Hydrosulphite—
For reducing Indigo and vat dyes. Of highest quality and absolutely standard.

FORMOPON—For discharging.

FORMOPON EXTRA—For stripping.

PROTOLIN—For stripping.

INDOPON W—Indigo Discharge Assistant.

TARTAR EMETIC—Technical.

Represented by

The MAKENWORTH COMPANY
Greensboro, North Carolina

Chas. Lennig & Company

Incorporated

40 North Front Street Philadelphia, Pa.
Works: Bridesburg, Philadelphia, Pa.

Manufacturers of

Concentrated Sodium Sulphide
Crystal Sodium Sulphide

Also manufacturers of the following chemicals:

ALUM	GLAUBER SALT
SULPHATE OF ALUMINA—	OIL OF VITRIOL
Iron Free	NITRIC ACID
PAPER MAKERS' ALUM	MURIATIC ACID
WATER FILTRATION ALUM	NITRATE OF LEAD

Represented by

The MAKENWORTH COMPANY
Greensboro, North Carolina

MONOPOLE OIL

Reg. Trade Mark No. 70991

A specialized textile oil, highly concentrated and double sulphonated which is used to better advantage wherever a Turkey Red or Soluble Oil has been employed because—

MONOPOLE OIL holds in solution all foreign matters and prevents the formation of lime soaps, iron spots, Calcium or Magnesium Salt, and thus—

Promotes level dyeing;
Assists in better penetration of dyestuff;
Increases the lustre;
Gives more body and a desirable handle.

For the best results in dyeing, bleaching, mercerizing and finishing of wool, cotton and silk, try this specialty.

Allow us to send samples.
The product will prove itself.

JACQUES WOLF & CO.
PASSAIC, N. J.

Staley's

Staley service brings to bear upon mill problems the combined resources and experience of the Staley chemical and engineering staff.

Following a comprehensive survey of individual mill conditions and production needs, special starches are compounded to meet specific requirements. Inevitably, the quality of your output is increased, and cost is reduced, as a result.

Maintaining the quality of Staley starches in absolute and unvarying agreement with original formulae are manufacturing and laboratory facilities unsurpassed in modernity and scope.

Investigate Staley service! Write today!

A. E. STALEY MFG. CO.
DECATUR, ILLINOIS

508 Andrews Law Bldg.
Spartanburg, S. C.
G. A. Dean, Manager

Ansley Hotel
Atlanta, Ga.
J. W. Pope, Manager

25 Church St.
New York City
W. H. Randolph, Manager

88 Broad St.
Boston, Mass.
L. R. Dickinson, Manager

Starch

From the Standpoint of Satisfaction

KATIGEN DEEP BLACK GGN CONC.

would be the biggest thing in your plant!

This concentrated Sulphur Black simplifies dyeing operations through its dependable strength, shade, solubility and uniformity.

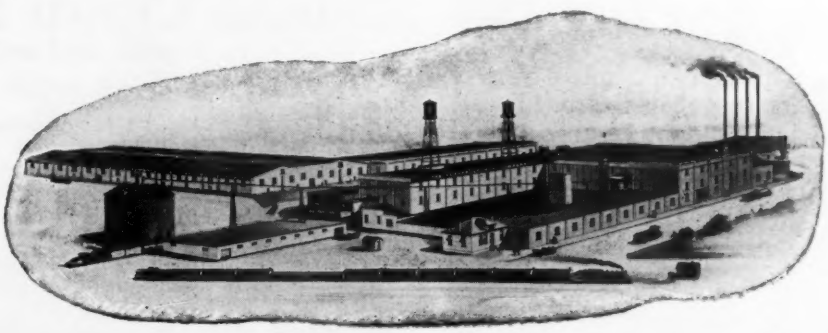
Give it a trial!

The Grasselli Chemical Co.

Dyestuff Department

117 Hudson Street New York

Boston Providence Philadelphia Charlotte Chicago
New Orleans San Francisco



VICTOR MILL STARCH

The Weaver's Friend

It boils thin—it penetrates the warps—increases breaking strength and carries the weight into the cloth. Being thoroughly washed free of gluten and other foreign matter it gives a bleach and finish to the goods that you can get from no other starch.

A trial order will convince you that VICTOR STARCH has no equal on the market.

THE KEEVER STARCH COMPANY, Columbus, Ohio

Southern Agent: MR. JAMES H. MAXWELL, Greenville, S. C.

If you are not already using VICTOR STARCH call on our representative for a demonstration at your convenience.

Chlorantine Colors

The conspicuous feature of the Chlorantine Colors is their *unusual fastness to light.* For level dyeing, where fastness to acid, alkali, rubbing and hot pressing are required—THEY ARE UNEXCELLED.

Recommended for application to all goods which must withstand the action of light, such as UPHOLSTERY GOODS, CASEMENT CLOTHS, CURTAINS, VELVETEENS, LINEN PLUSH, Etc.

Sole Selling Agents for Dow's Indigo and Midland Vat Blues

Sole Representatives
in the United States
for the
SOCIETY OF CHEMICAL INDUSTRY IN BASLE
Basle, Switzerland

CIBA CO. Inc.
BOSTON BRANCHES PROVIDENCE
PHILADELPHIA
COLUMBUS, GA.
CEDAR & WASHINGTON STS.
NEW YORK

CIBA CO., LTD., Montreal, Canada

Accidents Will Happen

"Accidents will happen" unless you wisely provide against them before they occur with their attendant trouble and expense.

By standardizing the use of

WYANDOTTE DETERGENT

for all your floor cleaning you only follow the example of thousands of mill superintendents who wisely "lock the stable door before the horse escapes."

And not alone are you insuring safe floors for the feet of your busiest and most active workers, but also your floors will be faultlessly clean and sanitary at an expense far below what they have cost heretofore.

Indian in diamond

in every package

Order from your supply man.

The J. B. FORD CO., Sole Mnfrs.
WYANDOTTE, MICHIGAN

Douglas Crown Starch

Smooth and uniform—free from all foreign substances

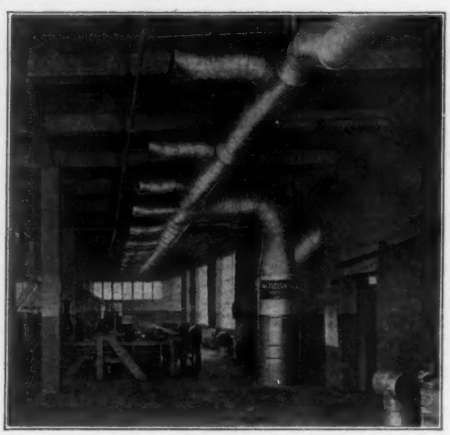
Unlike the ordinary method, Douglas Crown Starch is manufactured by a special process. First, it is refined, then dried in large, especially made, rotary vacuum driers under low temperature, thus eliminating crustings and cooked particles.

The use of the vacuum drier also prevents specks and foreign substances, such as wood, slivers, nails, etc., from getting into the starch. Finally, the starch is bolted through silk, producing a finished starch absolutely uniform. Douglas Crown Starch is as pure as the edible starch used in the home. In addition to Douglas Crown, we manufacture a full line of starches all made by our special process.

Our representative will promptly supply samples and full information. Write to

PENICK & FORD, Ltd., Inc.
Manufacturers of Corn Products
CEDAR RAPIDS, Iowa
or to any of the following offices:

New Orleans, La. — *Southern Representatives N. E. Representative*
Montgomery, Ala. — G. L. Morrison — Marble-Nye Company
New York, N. Y. — Greenville, S. C. — Boston and
J. H. Almand, — Worcester, Mass.
1305 Healey Bldg., Atlanta, Ga.



Engineering

Placing your problems in the hands of this organization, gives you the benefit of all the experience of the foremost engineers in the country on air conditioning systems.

These specialists who are nationally known and recognized, have made air conditioning their life study.

They will be glad to refer you to an installation near you or give you the names of concerns in your own business who have successfully installed our air conditioning systems. You may then get in touch and understand why Sturtevant-Fleisher Systems are preferred.

Whatever your problems or conditions, these engineers who have installed hundreds of systems all over the country, will be glad to cooperate with you.

Atlanta, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Hartford, Los Angeles, Minneapolis, New York, Philadelphia, Pittsburgh, Portland, Washington, Rochester, St. Louis, Salt Lake City, San Francisco, Seattle

Sturtevant
PUTS AIR TO WORK
HYDE PARK, BOSTON, MASS.

W. L. FLEISHER & CO., Inc.
31 Union Square West
New York, N. Y.

727

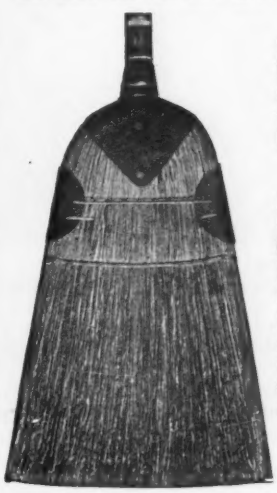
SAVOGRAN

The Standard Cleaning Powder
Has Cleaned Mills for Two Generations. Act Now.

"ASK YOUR SUPPLY HOUSE"

India Alkali Works, Boston

THE
"Southwestern" Iron Clad
Is the IDEAL Cotton Mill Broom



Only the best grade of broom corn is used in these brooms—they are built strong and will withstand the hardest usage.

The light weight, yet strong and substantial shields used gives the broom ample protection and at the same time allows the proper amount of broom corn to be used, thus giving them excellent sweeping qualities.

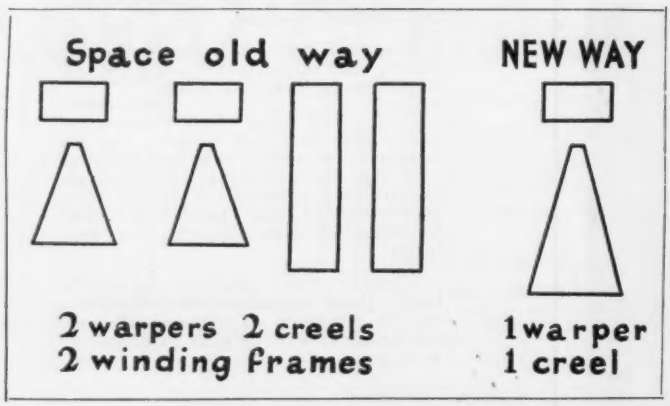
MADE RIGHT!
PRICED RIGHT!

Inquiries and orders receive prompt attention.
Sold direct and through
all principal distributors.

The Southwestern Broom Mfg. Co.
Evansville, Indiana

NEW AUTOMATIC CREEL

for direct warping from FILLING WOUND BOBBINS



COMPLETELY ELIMINATES the

Spooling of the yarn

Spooling waste

Undue and irregular tension of yarn due to spooling

Stoppage for doffing

Doffing is done while warper is running.
Greater production from better warps at lower cost.
Better loomage from auto-creel warps because
Elasticity is preserved in yarn.

For Information address

AUTO CREEL CORPORATION, NEW YORK

Room 915, Fifth Ave. Building
Alfred Suter, Sales Manager

TRADE MARK

LOWELL MILL CRAYONS

the original crayons for textile mill use, and for years the standard with America's leading mills.

Lowell Crayons are made in white and 15 colors, as follows:

1 Yellow	2 Red	3 Pink	4 Blue	5 Purple	6 Brown
7 Black	8 Green	9 Orange	10 Dark Green	11 Light Red	
12 Rose Pink	13 Light Green	14 Light Blue	15 Orange No. 2	Wh.	

Order by number, please.

LOWELL CRAYON CO.

Lowell, Mass.

The Palmer Adjustable Thread Guide

For Ring Spinning and Twisting Frames

Easily Adjusted.

Extreme accuracy and permanence of setting.

Cheapest of them all.

Mail guide-block for free sample.

Patented and manufactured by

THE I. E. PALMER COMPANY

Middletown, - - - Connecticut

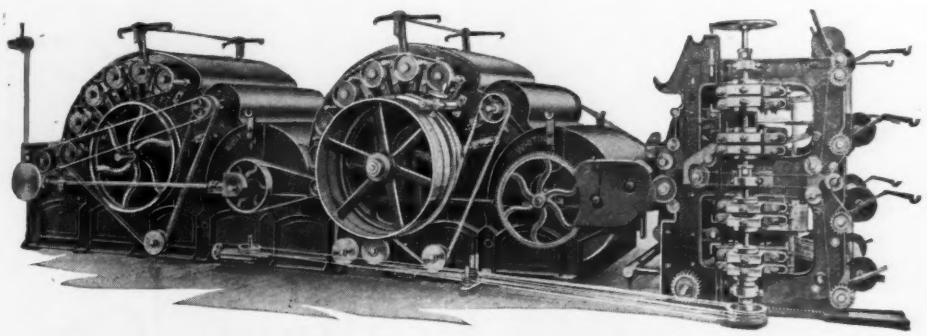
WHITIN MACHINE WORKS

ESTABLISHED 1831

TEXTILE MACHINERY

MANUFACTURERS OF

Complete Condenser Plants for Wool and Cotton Waste Yarns

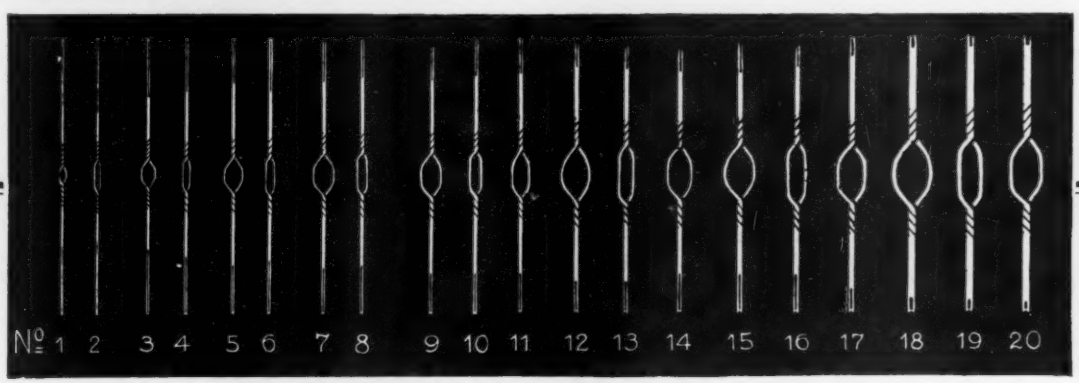


Intermediate and Finisher Cards with Four-Bank Condenser

MAIN OFFICE AND WORKS

WHITINSVILLE, MASS., U.S.A.

SOUTHERN OFFICE CHARLOTTE N.C.



Ordinary Warp Eyes

SWISS TWIN WIRE HEDDLES

Paper Mache Spools and Bobbins

Drop Wires—Pick Forks

J. J. REUTLINGER

160 Fifth Ave. **New York City**

Southern Representative; **RALPH M. LANE,** P. O. Box 1375, Charlotte, N. C.

Williams' Shuttles are Built For Service

Williams' Shuttles are constructed from the mill man's standpoint. It is only natural that such an appreciation of textile problems should result in a product that has unusual wearing qualities. It is sought to make every part that enters into the construction of these shuttles perfect in itself, from the air dried wood block to the practically unbreakable springs. The result is a shuttle that operates with uniform smoothness and that exceeds expectations for durability.

An actual tryout in your mill will demonstrate the merits of Williams' Shuttles far better than we can describe them to you. Let us send you some samples for this purpose. If you have any question with regard to shuttles our staff of shuttle experts will be very glad to help you.

The J. H. Williams Co.

"The Shuttle People"

MILLBURY, MASS.

Geo. F. Bahan, Southern Representative

Wire Heddles **Heddle Frames**

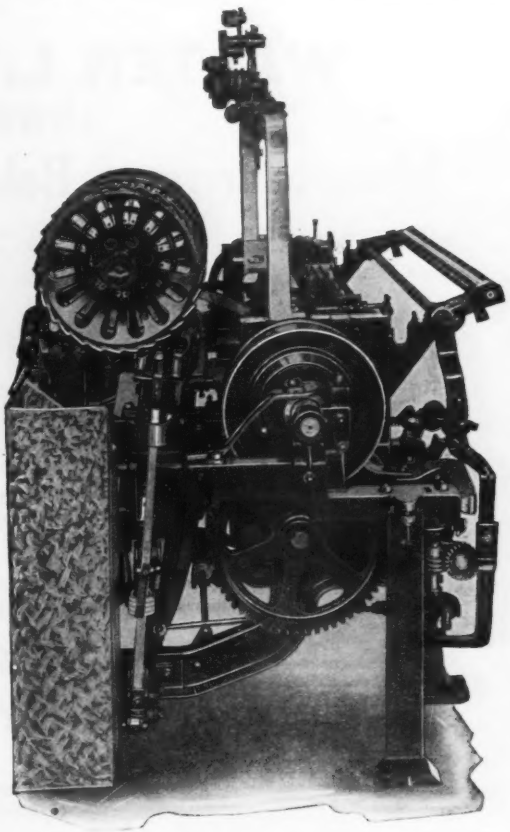
SCOTT TESTERS

This cut shows one of our Combination Yarn and Fabric Testers equipped with Autographic Recorder. This attachment automatically draws a line on ruled paper giving both the strength and stretch readings. By its use, a clearer understanding of these qualities of the material is obtained as the whole test is given in one line.

May we send you the catalogue?

HENRY L. SCOTT & CO.

101 BLACKSTONE ST. PROVIDENCE, R. I.



The Latest

NORDRAY

Automatic Loom

Multiple-harness, Feeler type

built by

HOPEDALE MANUFACTURING CO.

at MILFORD, MASS.

SOUTHERN OFFICE at GREENVILLE, S. C.

This loom was shown at the Late Greenville Exposition and excited great interest.

It is Still the Simplest.

WALTER L. PARKER CO.

LOWELL, MASS.

Manufacturers of Bobbins, Spools and Skewers

OUR SPOOLS:—

Are made to stand severe service and are made from thoroughly dried stock, so constructed that they are giving entire satisfaction.

OUR BOBBINS:—

Are made from the best grade of stock, and through the efficiency of our workmanship, are true running, and properly fitted on spindles.

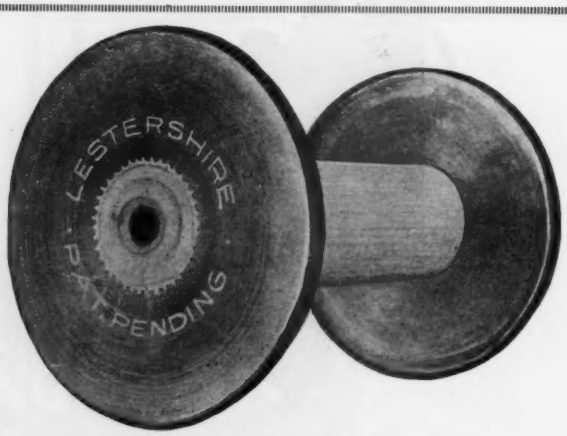
OUR PRODUCTS:—

Bobbins—Warp and Filling. We put on all kinds of metal shields and caps.
Speeders—Plain; steel rings; metal base.
Spools—Warper; Twister.
Our Metal Bound Spools are pronounced the best on the market.
Skewers—Cop, Warper and Roving, of all descriptions.
Twisters—Universal Winder Rolls and Bobbins, Comber Rolls, etc.

We Specialize in New Mill Equipment

CHARLOTTE SUPPLY CO., SOUTHERN AGENTS.

What Part of the Spool is First to Wear Out?



Your superintendent will confirm our statement that 99% of all Warper, Twister or Spooler Spools become useless on account of the heads breaking, wearing rough or loosening. This is true of all types of Spools heretofore on the market.

With the Lestershire Type Vulcanized Fibre Head Spools just the opposite is true. The Heads will outwear the barrels because Hard Vulcanized Fibre (the same material from which end thrust bearings and automobile gears are made) will never break, wear rough nor splinter.

Of course the first cost is higher but, figuring your charges per thousand spools per year, they are by far the most economical spools on the market today.

In addition Lestershire Fibre Head Spools will in the ordinary mill give you an increased unloading production of nearly 50%. Put a row on your creel and compare the time necessary to unload with any other type Spool.

On the smooth Rock Maple barrel, cleanly jointed to the Fibre Heads which cannot get rough and cannot be dented, there is no place for the yarn to catch.

Spindle wear is also eliminated by bushings of hard well seasoned Dogwood.

Increased traverse can be had which will give you greater yardage on your spools. This means a saving of many dollars in the course of a year, not only direct but in labor required to change the spools.

At your request we will gladly send samples for purposes of test and comparison.

LESTERSHIRE SPOOL & MFG. CO.

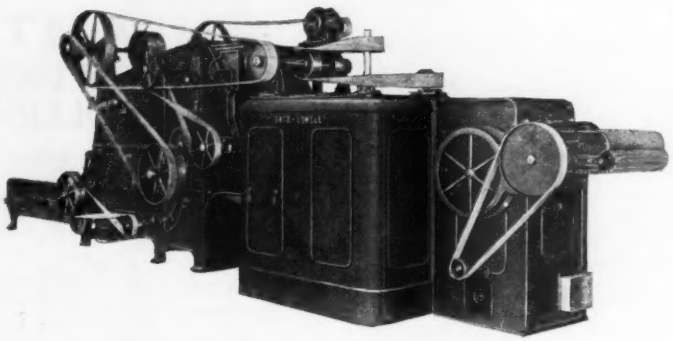
Manufacturers Mill Spools, and Bobbins, of Every Description

General Offices and Factory
JOHNSON CITY, N. Y.

Southern Branch Office:
32 So. Church St.,
CHARLOTTE, N. C.

SACO-LOWELL

Vertical Opener with Screen Section Delivery fed by No. 4 Bale Breaker. Combination driven by individual motor and new gallows drive.



Opening combinations furnished with single, double or triple vertical openers.

SACO-LOWELL SHOPS

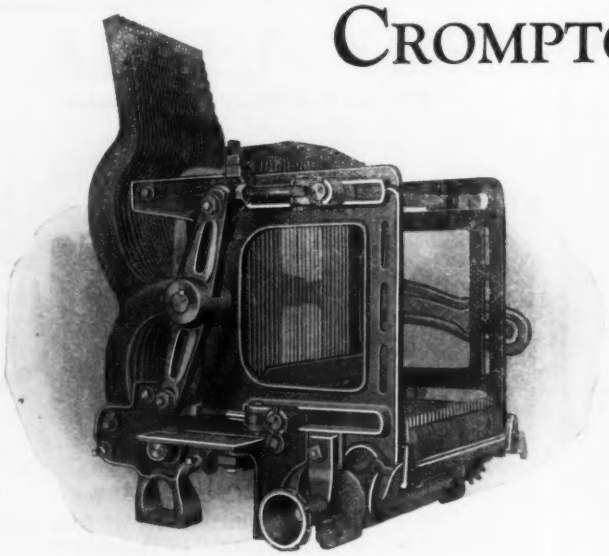
ROGERS W. DAVIS
Southern Agent
Charlotte, N. C.

Branch Southern Office
Greenville, S. C.

77 Franklin St.
BOSTON, MASS.

SHOPS:
Biddeford, Me.
Lowell, Mass.
Newton Upper Falls, Mass.
Pawtucket, R. I.
Charlotte, N. C.

CROMPTON & KNOWLES DOBBIES



NEW FEATURES OF SPECIAL INTEREST TO WEAVERS AND FIXERS

1. Built with slotted fingers and locking rod (patented), making it easy to remove, clean and replace the fingers.
2. We are now prepared to equip the dobby shown above with pressed steel jack backs and drop forged top and bottom hooks.
3. We call attention to the carefully machined swivels and studs used for operating the dobby knives.
4. This dobby can be applied readily to any make or type of loom.

CROMPTON & KNOWLES LOOM WORKS

WORCESTER, MASS.

PROVIDENCE, R.I. PHILADELPHIA, PA. PATERSON, N. J.

ALEXANDER & GARSED, CHARLOTTE, N. C., Southern Representatives

For those of you who did not attend the Textile Show

It was too bad that you missed the many new ideas and improvements that have been developed since the last show.

At "Shuttle Headquarters" for instance, there was an unusually interesting display of Shambow "Custom Built" Shuttles.

They created much favorable comment.

But, because you did not see them at the show is no reason why you shouldn't have an opportunity to see them.

We are prepared to send you a man who will show you shuttles and weaving devices of great interest to you. He is a Shuttle Engineer and should you require it, he is fully capable of redesigning your present shuttle or designing an entirely new model for you.

This expert service won't cost you a cent and may save you much money. Just sign and mail the coupon or write us.

Shambow Shuttle Company
Woonsocket, R. I.

JOHN C. SHAMBOW, Pres. & Treas. — H. H. ULLMAN, V. Pres. & Gen. Mgr.

Philadelphia 42 421 Bulletin Bldg. — Paterson, N. J. 245 Straight St. — Greenville, S. C. Southern Factory

COUPON

SHAMBOW SHUTTLE CO., Woonsocket, R. I.

We will be interested to learn more about the new shuttles, tensions, threaders and other devices without obligating ourselves in any way.

Company .....
By .....
Address .....
.....

SHAMBOW MAKES
shuttle bills smaller
interruptions fewer
production greater
products better

MORE
SOUTHERN SPINNERS
are using
"AMTEX"
SPINNING, TWISTING AND SPOOLER TAPES
Than ever before

This increasing demand indicates the superiority of AMTEX Tapes over all others.

We are pleased to build special Tapes for your particular needs.

Send us your specifications and we will guarantee satisfaction.

Manufactured by

AMERICAN TEXTILE BANDING CO., INC.

GERMANTOWN, PHILADELPHIA, PA.

Sold in the South by

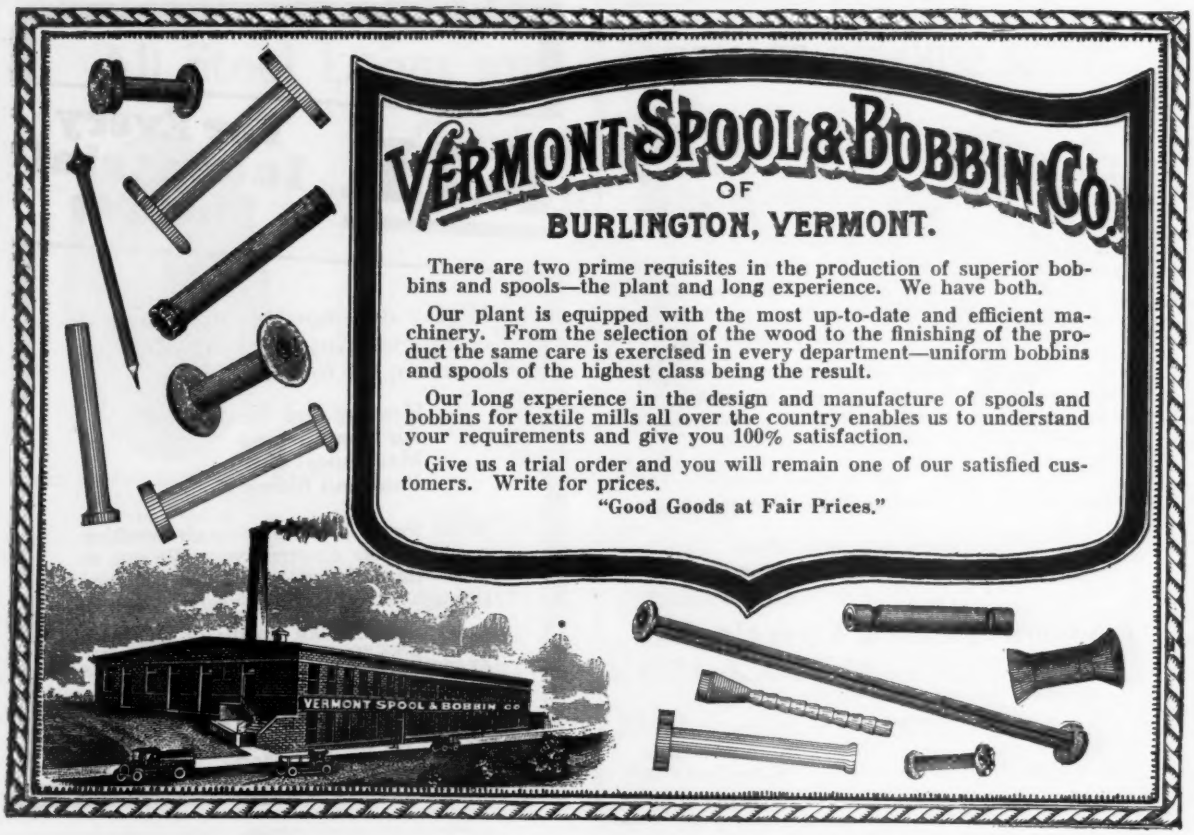
Charlotte Supply Co., Charlotte, N. C.
James Supply Co., Chattanooga, Tenn.
Wilson Company, Greenville, S. C.

Cost
may be a primary consideration

The Liberty Knotter
not only fills the requirements of low first cost but is most simple in construction and economical in upkeep and operation. Give it a trial.

Guaranteed for one year
Write for information

A. B. CARTER, Sales Agent,
Gastonia, N.C.
Mill Devices Co. Durham, N. C.


VERMONT SPOOL & BOBBIN CO.
OF
BURLINGTON, VERMONT.
There are two prime requisites in the production of superior bobbins and spools—the plant and long experience. We have both.
Our plant is equipped with the most up-to-date and efficient machinery. From the selection of the wood to the finishing of the product the same care is exercised in every department—uniform bobbins and spools of the highest class being the result.
Our long experience in the design and manufacture of spools and bobbins for textile mills all over the country enables us to understand your requirements and give you 100% satisfaction.
Give us a trial order and you will remain one of our satisfied customers. Write for prices.
"Good Goods at Fair Prices."
VERMONT SPOOL & BOBBIN Co

ALLEN COMPANY COMBINATION SECTION BEAMS

THE Combination Section Beam of our manufacture is stronger, reduces loss from bent shafts, and is better adapted for storage and shipping of yarn. It is stronger—being built around the pipe and not to the shaft itself. Inner heads, being driven on pipes under great pressure, are thus secured without use of wedges or metal flanges. Staves of barrels are fastened to inner heads by countersunk screws. Heads are held on barrel by means of stay-bolts passing through entire length of beam. Leverage on heads is lessened in so much as point of contact with beam is farther from center. Shaft passes through pipe, is accurately centered and held in pipe by taper nuts. If bent, release nut, remove shaft, straighten, then return to pipe. By removing shaft, loaded beams can be stood on end, making great saving in space for storage. Furnished complete with shaft, and can be used with either wooden or metal heads.

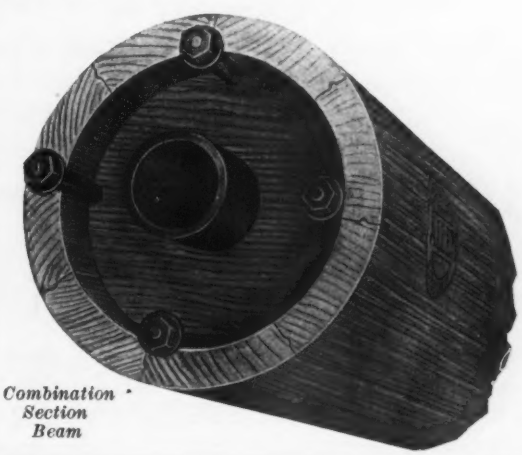
Profitable Investments

Allen Company Products, tried under your own conditions, will prove profitable investments. Catalog showing the complete line gladly furnished on request. Ask for it today.

ALLEN COMPANY, NEW BEDFORD, MASS.

Also Manufacturers of

Top Beams, Beam Trucks, Braider Reels, Lug Sticks, Mechanics Benches, Overseers Desks, Cabinets and other wooden specialties



Combination Section Beam

YOUR SPINNING FRAMES

The plumbing of your Spindles is very important. If the Spindles are bent they should be straightened, a crooked Spindle cannot be properly plumbed.

For the past twenty-seven years we have been Repairing Spinning Frames. The troubles of the Spinning Frames are among the most important leaks in the mill.

The proper lining and leveling of the frames add longer life to the rolls, gears and the frame in general.

A large number of mills have us make regular yearly inspection of their Spinning Frames. This keeps the frames in the highest state of efficiency—which means increased production and decreased expense.

Our Expert Mechanics Are At Your Service in the Repairing of Your Spinning Frames—Write Today.

We Duplicate Any Style Flyer Pressers—Catalog on request.

Southern Spindle & Flyer Co., Inc.

"We Manufacture,
Overhaul and Repair Cotton Mill Machinery."
Charlotte, N. C.

W. H. MONTY, Pres. and Treas.
W. H. HUTCHINS, V. Pres. and Secy.

REEDS

For Cotton, Woolen, Worsted, Silk, Tire Fabrics, Webbing, and Wire Cloth.

We make a specialty of all Metal reeds, for Tire Fabrics, and Leno work.

HAYES LOOM REED & HARNESS CO.
182 Farm St. Woonsocket, R. I.

AIR For Every Industrial Purpose

Highly developed equipment and complete Engineering Service covering the following lines:

Heating and Ventilating
Air Conditioning
Mechanical Draft
Fans and Blowers

Write for bulletins on any air-handling problem that concerns you. We put at your disposal the knowledge acquired through forty successful years.

AMERICAN BLOWER COMPANY, DETROIT
CANADIAN SIROCCO CO., LTD., WINDSOR, ONT
BRANCH OFFICES IN ALL PRINCIPAL CITIES (332)

American Blower

Sirocco — EXHAUSTERS · VENTILATING FANS · AIR WASHERS · BLOWERS · ENGINES FOR HEATING, VENTILATING, DRYING, AIR CONDITIONING, MECHANICAL DRAFT

AMERICAN SUPPLY COMPANY
PROVIDENCE, R. I.

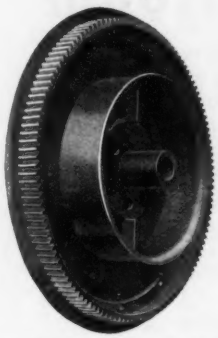
Manufacturers of

LOOM HARNESS,
WEAVING REEDS,
OAK TANNED LEATHER
BELTING, STRAPPING,
ETC.

We make a specialty of Harness for Warp Drawing Machines

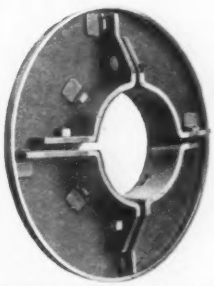
All Steel Loom and Section Beam Heads

Cannot Break
Do not Bend



"ALL STEEL" LOOM BEAM HEAD
"MALLEABLE" GEAR
Patent Pending

"ALL STEEL" SECTION BEAM HEAD
PATENTED



"ALL STEEL" ADJUSTABLE HEAD
SPLIT OR SOLID TYPE
PATENT PENDING

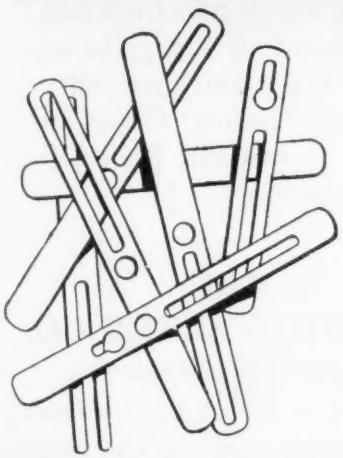
DUPLICATE YOUR CAST IRON HEAD IN STEEL — ELIMINATE ALL BREAKAGE
MAKE YOUR BEAM HEAD INVESTMENT PERMANENT

Mossberg Pressed Steel Corporation

Attleboro, Mass.

SOUTHERN OFFICE 201 AUGUSTA ST. GREENVILLE, S. C.

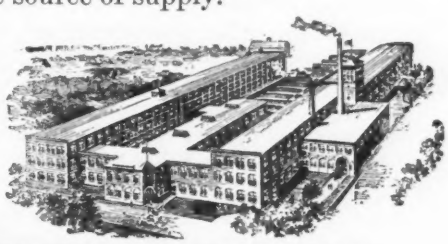
GREIST



Satin Finish Loom Drop Wires
are *Good Wires*

Uniformly made—free from burrs.
A reliable source of supply.

The
Greist Manufacturing
Company,
Dept. "C"
New Haven, Conn.



Southern Representative
SLAUGHTER-McCABE COMPANY, INC.
GREENVILLE, S. C.

Profits in the Shipping Room

Profits can be lost in your shipping room just as fast as they can be lost in any other department of the mill through inefficient methods. The question of shipping containers is more important than you think, for improper containers and packing mean not only a loss of customer good-will, but actual losses from damage to shipments, not to speak of unnecessarily high freight charges that could be reduced.

WOOD BOXES are the best customer-satisfying shipping containers that could be used, and HIGHTOWER Wood Boxes are made with interlocking features which make it possible to use lighter weight materials which not only save freight charges but afford the greatest damage protection insurance at minimum cost.

Write us your needs and our representative will be glad to call.

HIGHTOWER BOX & TANK CO., ATLANTA, GA., and BIRMINGHAM, ALA.

HIGHTOWER
Wooden Packing Cases

It's Easier To Make Friends Than To Keep Them

Some people attract friends easily and lose them quickly. It's the same with typewriters. Some look attractive but they don't wear.

THE L. C. SMITH & BROS. TYPEWRITER binds its friends by chains of service. It gives lasting satisfaction and makes lasting friends.

Send for booklet.

L. C. Smith & Bros. Typewriter Co.
Executive Offices :: :: SYRACUSE, N. Y.

THIS Magazine is a product of our plant.

OF more interest to you however, is the fact that we are equipped to handle anything which you may need in the printing line. We make a specialty of the "Better Class of Blank Books and Mill Office Supplies."

THE
A. J. SHOWALTER CO.
Dalton, Georgia
"The House of Better Service and Prices"

PERKINS PRACTICAL BRUSH
ATLANTA BRUSH COMPANY

LOOK FOR THIS TRADE-MARK

Two Brushes may look very much alike. But their lasting qualities are not the same.

For your protection—"Perkins Practical" Brushes bear the trade-mark shown above.

It is your guarantee of quality and service in Textile Brushes.

"Perkins Practical" Brushes were the first guaranteed Brushes offered the Textile Mills of the South. Over night they settled the perplexing problem of Brush Buying

Do not buy Brushes because they look like "Perkins Practicals." Get the originals—they cost no more.

Look for the trade-mark.

ATLANTA BRUSH CO.
ATLANTA, GA.

ATLANTA BRUSH COMPANY
A Brush for every Textile Need

Electric Scrubbing!

Are your floors CLEAN?

Hand scrubbing and mopping systems cannot produce CLEAN FLOORS economically.

FINNELL Scrubbers remove *all* the dirt at a cost less than for hand-and-knee scrubbing or mopping.

Mill sized FINNELL Scrubbers will CLEAN from 2000 to 6000 square feet per hour. Instead of only one brush a Finnell Scrubber has from four to eight brushes. These brushes whirl around at 144 revolutions per minute.

Write for the new illustrated broadside showing several styles of Finnell Equipment.

Now Ready! Motion pictures of Finnell machines in operation in textile mills. One of our experts will be glad to bring his projector to your mill and give a private showing. No obligation. Write

AMERICAN SCRUBBING EQUIPMENT SALES CO.
General Offices and Factories:
511 COLLIER ST. HANNIBAL, MO.

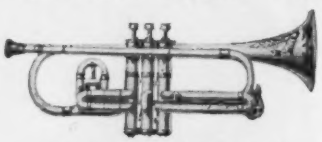
Offices in Principal Cities

FINNELL SYSTEM
OF ELECTRIC SCRUBBING
"Clean Floors Reflect Clean Business"

John Philip Sousa endorses Conn instruments.

Let Conn Help You Organize a Band

Our half-century of experience is at your disposal. We'll gladly advise with you regarding the benefits of a band or orchestra and explain how the details of organization can be carried out without obligation to you.



Complete Sets of Instruments at Reasonable Prices

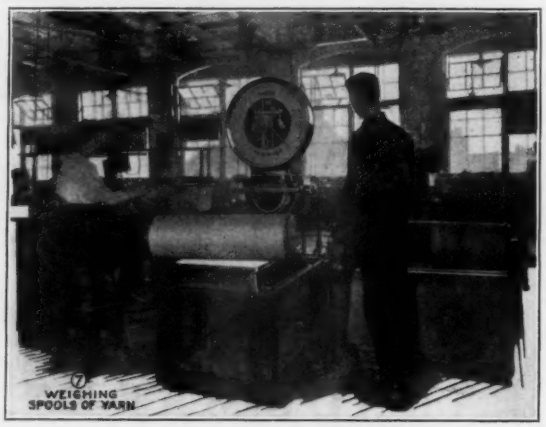
Conn equipment insures rapid progress because Conn instruments are **easiest to blow** and possess many exclusive features which make them most desirable for artists and beginners as well.

For Complete Information Write

C. G. CONN, LTD.

World's Largest Manufacturers of High Grade Band and Orchestra Instruments

1105 Conn Bldg. **Elkhart, Indiana**



Automatic Scales

For Weighing or Checking

Raw Material	Bobbins
Sorts	Roving
Soap, Alkali and Dyes	Yarn
Balls and Sliver	Yardage
Test Pieces	Section Beams
Tops	Shipments
Laps	And for many other purposes.

Toledo Scale Company, Toledo, Ohio

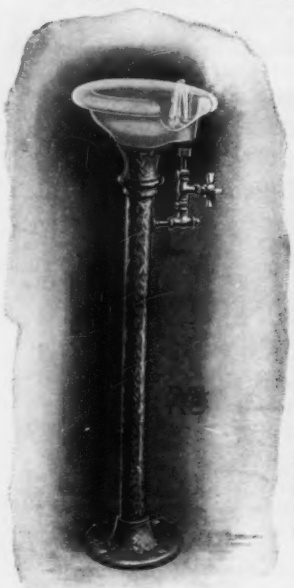
Canadian Toledo Scale Co., Limited, Windsor, Ontario

Largest Automatic Scale Manufacturers in the World

106 Sales Rooms and Service Stations in the United States and Canada. Others in thirty-four foreign countries

EQUIP YOUR PLANT WITH

Rundle-Spence "Vertico-Slant" DRINKING FOUNTAINS



Rundle - Spence "Vertico-Slant" Drinking Fountains are the direct result of years of experimentation, with the view to producing a drinking fountain that would not merely serve as a convenient method of supplying drinking water, but a fountain absoultely sanitary in design, durable in construction,—plus economical in cost.

The construction of the RUNDLE - SPENCE "Vertico-Slant" Drinking Fountains absolutely eliminates all possibility of contamination. They are positively germ proof, durable in construction, plus economical in cost.

The Rundle-Spence "Vertico-Slant" Drinking Fountain has no hood on which the corner of the mouth can rest — LIPS CANNOT TOUCH THE NOZZLE—no filth collecting crevices that are impossible to clean—but is neat in appearance and absolutely sanitary in every respect. Made in a variety of designs to meet every requirement.

Catalog Furnished on request

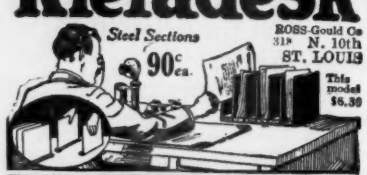
Rundle-Spence Mfg. Company

MILWAUKEE **WISCONSIN**

Send for FREE story

Interesting, illustrated folder **"How to get Greater Desk Efficiency"** shows how to keep your desk cleared for action. Thousands of Kleradesks are giving entire satisfaction. Saves time locating, distributing or sorting papers. Takes less space than a tray. Sent FREE trial.

Kleradesk



Mailing Lists

Will help you increase sales

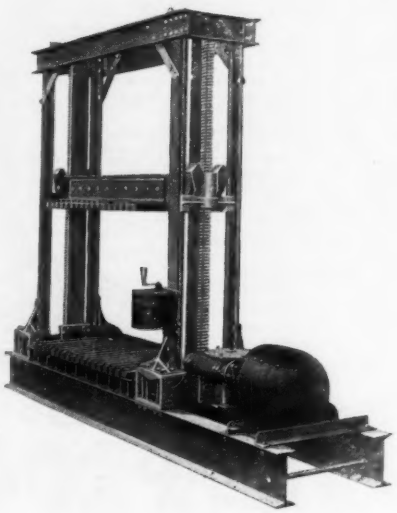
Send for FREE catalog showing details covering names of your best prospective customers. Counts and prices are given on thousands of different Mailing Lists.

99% Guaranteed by refund of 5¢ each

ROSS-Gould Co 10th Street St. Louis

Another

REX PRESS



New Cloth Press

Speed, Strength, Simplicity

Built any size and pressure.

The Rex Creed

To build a press so good that the simple truth about it will be adequate recommendation and to price it so fairly that its value can never be questioned.

Watch for the Yarn Press.

REX ENGINEERING CORPORATION

Dunkirk, N. Y.

J. S. HULME

Southern Representative
11 East Fifth St.,
CHARLOTTE, N. C.

Meeco Wash Bowls

Have Cut Production Costs in Every Mill Where They Have Been Installed. Let Us Send You Proof

Write Today for Complete Information

Lockers
Chairs
Drinking Fountains

METAL MEECO PRODUCTS

Shelving, Enclosures
Boxes and
Cabinets

MANUFACTURING EQUIPMENT & ENGINEERING COMPANY

FRAMINGHAM, MASS.

MILLS METAL

Attractive Permanent — **Sanitary Economical**

TOILET PARTITIONS, SHOWER STALLS, DRESSING ROOMS, SHELVING, TABLES, DOORS, BINS, ETC.

If you want metal products which combine attractiveness, permanency, sanitation and economy, you will make no mistake in specifying "Mills Metal."

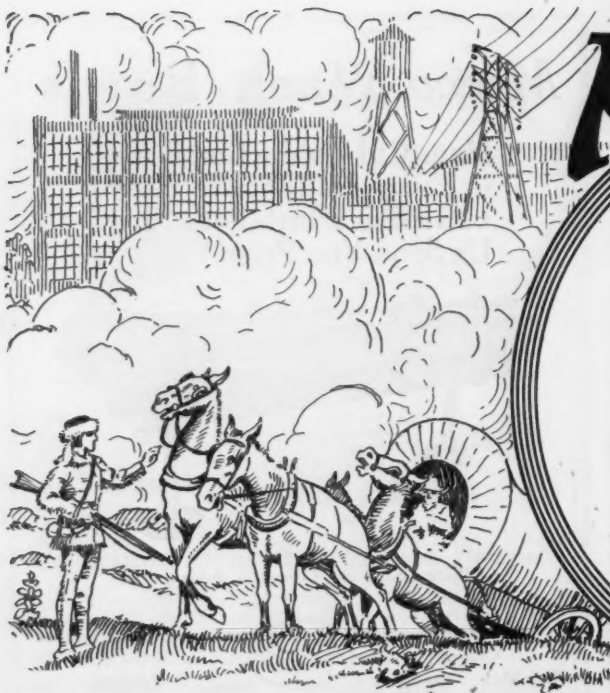
Once installed "Mills Metal" will give lasting satisfaction to the purchaser.

"Slant Lip Diamond Rail Top and Bottom"

Constructed entirely of the highest quality rust-resisting steel. Finished in Olive Green or Gray Baked Enamel.

THE MILLS COMPANY

Dept. A, **Cleveland, Ohio**



Pioneers!

LIKE the early western settlers that blazed the trail, H. & G. Engineers have pioneered true service electrically among the Southern textile industries.

H. & G. Electrical System in scores of Southern mills, are today giving just as perfect and economical service as when first installed. Today they are making production easy and efficiently lighting the way for more than two million happy spindles.

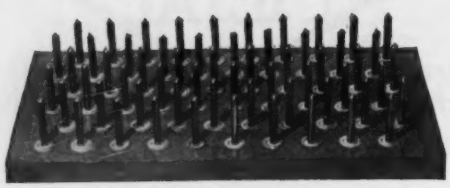
If it's a H. & G. Trouble-Proof Electrical Installation, it's good from the inside out and there will be no question as to its economy, efficiency, dependability and safety. The pioneers in electrical installations in the textile South know from experience what is best for your particular conditions.

HUNTINGTON & GUERRY, INC.
GREENVILLE, S. C.

HUNTINGTON & GUERRY TROUBLE PROOF ELECTRICAL INSTALLATIONS

H & G TROUBLE-PROOF ELECTRICAL INSTALLATIONS

KORE-LOKT PIN BOARDS
REG. U. S. PAT. OFFICE



Patent Rights Pending

Are You Responsible

for good weaving in your mill? If so, you should know Kore-Lokt Pin Boards and the story of their usefulness in modern loom equipment.

Expert Opinion from men in charge of the weave rooms in prominent mills is available to superintendents and overseers upon request.

Send for this information so you may know the merits of Washburn Kore-Lokt Pin Boards as an improvement over old style Filling Boxes. Learn how the other fellow checks up results from the "Build of Bobbins."

NEW BEDFORD, MASS.

PERFECTION SHELL ROLLS

FOR
BLEACHERIES
BALL WARPING
FINISHING PLANTS
CORD FABRIC SHIPMENTS

NEW BEDFORD, MASS.

Distributors for

GENERAL ELECTRIC

Our Atlanta and Savannah warehouses carry complete lines. Whatever your requirements — just so they are electrical — we can not only fill them, but insure prompt and efficient shipments.

We carry a particularly full line of textile mill equipment, illuminating units, lamps, motors, etc. Save yourself worry and inconvenience by drawing from our complete stock.

COMPLETE LINES OF

Wire
Conduit
Switches
Safety Devices
Fuses
Insulators
Lamps
Lighting Units
Fixtures
Fans
Street Lights
Motors
Brushes
Etc.
Anything Electrical

QUICK DELIVERY

CARTER ELECTRIC CO.

Distributors

ATLANTA SAVANNAH

ELECTRICAL SUPPLIES

GENERAL ELECTRIC CO.'S PRODUCTS—MOTORS, WIRE, WIRING DEVICES, ELECTRICAL, PORCELAIN CONDUIT AND FITTINGS, TRUMBULL SWITCHES.

Complete Stocks in Columbia for Prompt Shipment.

DISTRIBUTING GE JOBBER

PERRY-MANN ELECTRIC COMPANY

COLUMBIA, S. C.

Next to Daylight for Textile Mill Lighting

There's no light quite like daylight for textile work, but it's surprising how close artificial light has been brought to a real daylight effect.

With the new IVANHOE Glassteel Diffuser there are no sharp, confusing shadows. Light is evenly distributed—easy to see by—easy to work by!

IVANHOE Glassteel Diffusers are totally enclosed, and therefore easily kept clean and up to full efficiency. There's no glare, and just enough light is allowed to pass through the top openings to relieve the overhead darkness.

Near you is an IVANHOE distributor trained in the lighting requirements of mills like yours. Why not get the benefit of his advice since it involves no obligation? If you don't know who he is, write us direct.

IVANHOE-REGENT WORKS
of General Electric Company
Cleveland, Ohio

IVANHOE

GLASS SHADES–STEEL REFLECTORS

THE YOUNGSTOWN SHEET AND TUBE COMPANY
YOUNGSTOWN COPPEROID STEEL
YOUNGSTOWN, OHIO.

Consumers of Steel Sheets are rapidly awaking to the extraordinary durability and extremely high quality of

YOUNGSTOWN
COPPEROID STEEL SHEETS

These sheets have not only proven in actual test about three times as durable as ordinary iron or steel sheets, but they have shown equal superiority to so-called "Pure Iron" Sheets made in Open Hearth Steel Furnaces, and other sheets sold at much greater cost.

For Roofing, Siding and similar purposes, there is nothing to compare with these sheets obtainable at even approximately the same cost.

THE YOUNGSTOWN SHEET & TUBE COMPANY

YOUNGSTOWN, OHIO

DISTRICT SALES OFFICES:

BOSTON—120 Franklin St.
NEW YORK—30 Church St.
PHILADELPHIA—Pennsylvania Bldg.
ATLANTA—Healey Bldg.
PITTSBURGH—Oliver Bldg.
CLEVELAND—1038-40 Hanna Bldg.
DETROIT—2021-2022 First Nat'l Bank Bldg.
CINCINNATI—1004 Union Trust Bldg.
CHICAGO—Conway Bldg.
ST. LOUIS—1139 Olive St.
DENVER—First Nat'l Bank Bldg.
DALLAS—1401-2 Magnolia Bldg.
SAN FRANCISCO—604 Mission St.
SEATTLE—Central Bldg.
KANSAS CITY, MO.—1301 Commercial Bldg.
NEW ORLEANS—701 Maison-Blanche Bldg. Annex.
MINNEAPOLIS—Andrus Bldg.

29 Gauge Steel Fire Proof Shingles

DOWMAN-DOZIER
Galvanized
STEEL SHINGLES

25 years have passed since our organization and during that time every iota of our energy has been exerted in perfecting our products—of producing products worthy of the name "DOWMAN-DOZIER."

The beauty, economy and durability of our shingles are well known.

They are easily installed by anyone with a hammer and nails, they stay-put," they make a beautiful roof for any building, they are fire-proof, leak-proof and weather-proof—in short, the best roofing investment possible.

See us before placing your next order for roofing. We want to show you some facts and figures.

DIXIE VENTILATORS
PORTABLE ALL-STEEL GARAGES
SLIDING FIRE-PROOF DOORS
METAL FRAME WIRE GLASS WINDOWS
UNDERWRITERS TIN CLAD DOORS AND SHUTTERS
GALVANIZED GUTTERS AND FITTINGS
GALVANIZED PIPE AND FITTINGS
GALVANIZED WALL TIES AND PLUGS
GALVANIZED METAL SHINGLES
GALVANIZED CORRUGATED SIDING
GALVANIZED ROOFING
GALVANIZED PRESSED BRICK SIDING
GALVANIZED CORRUGATED SHEETS
GALVANIZED VALLEY ROLLS AND RIDGE ROLLS
GALVANIZED TANKS
METAL CEILINGS
METAL CORNICES
METAL SKYLIGHTS
COMPOSITION ROOFING
SLATE ROOFING
ASPHALT SHINGLES
BLOW PIPES
SMOKE STACKS
ETC., ETC.

Dowman-Dozier Mfg. Co.
Manufacturers—Contractors—Sheet Metal Products
ATLANTA, GA., U. S. A.

VOGEL
PATENTED

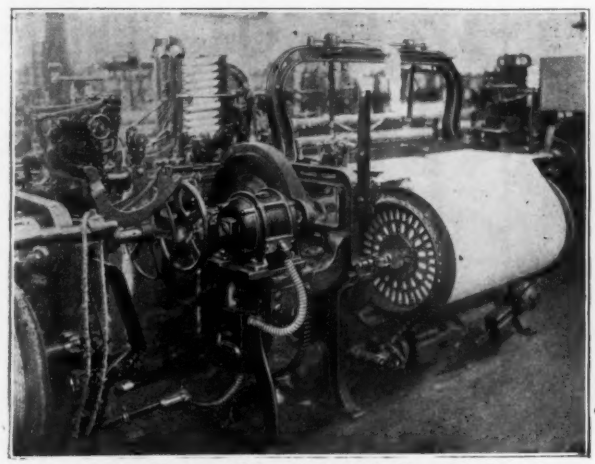
Frost Proof Closets

350,000 giving satisfaction. Save Water; Require no Pit; Simple in the extreme. The most durable water closet made. In service winter and summer.

Enameled Roll flushing rim bowls.
Heavy brass valves.
Strong hardwood seat.
Galvanized tank.
Malleable seat castings will not break.
Tested under hydraulic pressure before leaving factory.

ASK YOUR JOBBER

JOSEPH A. VOGEL CO.
WILMINGTON
DELAWARE



½ H.P. Loom Motors driving Automatic Cam Gingham Looms

Type "ARL" Loom Motors

Loom Motors

Allis-Chalmers Loom Motors for individual drive are designed especially for this class of service.

They are totally enclosed, thereby eliminating any trouble for dirt or lint getting into the motor; equipped with waste packed bearings, minimizing the required attention; have tapered shaft for the ready mounting and dismounting of pinions and are arranged for conduit connections.

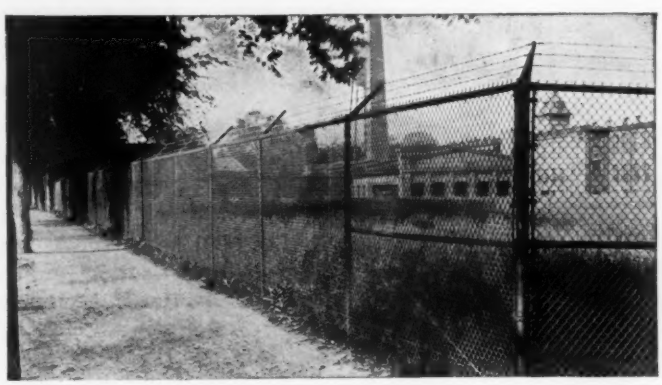
Send for Textile Bulletin

ALLIS-CHALMERS PRODUCTS
Electrical Machinery
Steam Turbines
Steam Engines
Gas and Oil Engines
Hydraulic Turbines
Crushing and Cement Machinery
Mining Machinery

ALLIS-CHALMERS MANUFACTURING COMPANY

MILWAUKEE, WISCONSIN, U.S.A.

ALLIS-CHALMERS PRODUCTS
Flour and Saw Mill Machinery
Power Transmission Machinery
Pumping Engines-Centrifugal Pumps
Steam and Electric Hoists
Air Compressors - Air Brakes
Agricultural Machinery
Condensers



Cyclone Invincible Chain Link Fence Enclosing Property of International Cotton Mills, LaGrange, Ga.

CYCLONE FENCE COMPANY

The Red Tag — Cyclone "Red Tag" Fence and Products — The Mark of Quality

Factories and Offices:
Waukegan, Ill., Cleveland, Ohio; Newark, N. J.; Fort Worth, Texas; Oakland, Cal. (Standard Fence Co.); Portland, Ore. (Northwest Fence and Wire Works).

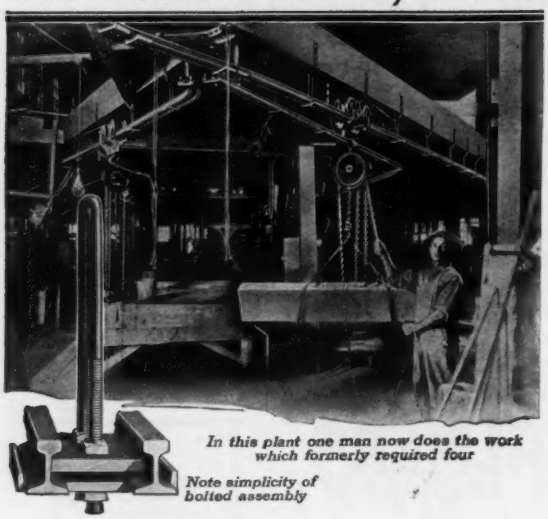
New Process Multiplies Life of Chain Link Fabric

The perfection of a new method of zinc coating Cyclone Chain Link Fence Fabric *after* weaving now makes possible a fence with a rust-protecting coating about five times as heavy as was possible by any other method known. It is another important Cyclone contribution to better fencing. Besides greatly increased durability this new fence saves by reducing maintenance cost.

The experience gained by Cyclone Experts through years of successfully meeting the most difficult fencing problems connected with textile mills guarantees you an exceptional service. A Cyclone Field Man makes a free investigation of your needs. Cyclone Service furnishes complete installation or skilled supervision of your workmen. In particular emergencies large plants have often been fenced in a phenomenally short time. Write for full details to the nearest office, addressing Dept. 35.

CYCLONE FENCE
PROPERTY PROTECTION PAYS

ATLAS CARRY-ALL
Overhead Track Systems



In this plant one man now does the work which formerly required four

Note simplicity of bolted assembly

—a simplified, inexpensive track system

Any mechanic can easily install this double rail track system. It can be attached to wood or concrete ceilings, joists or steel trusses. Length of hangers is adjustable for perfect alignment of track. Hangers are exceptionally strong and can be wide spaced for economy.

This track, *double rail for greater safety*, can be bent cold to any radius. 2 and 3-way switches and track gap fillers for passing sliding doors can be furnished as needed. Operation and installation are simple.

Make *your* labor force more productive with the Atlas Track System.

Our booklet illustrates and gives explicit instructions covering every step and detail of installation. The services of our engineering department are also offered whenever needed.

The Chisholm-Moore Mfg. Co.
Cleveland, O.
Hoists Cranes Trolleys
Overhead Track Systems
Branches: New York, Chicago, Pittsburgh

We Do One Thing—
—Apply Roofing

and the excellence of our work in the solution of mill roofing problems for the past 42 years has attained for us the distinction of being known as

"Dixie's Reliable Roofers"

We not only supply the best material, but see that it is applied in the most efficient manner possible to render the longest and most satisfactory wear. Consult us on your roofing problems. It will pay you—handsomely.

GRAVEL AND SLAG ROOFING
WATERPROOFING, INSULATED ROOFS
TAR CONCRETE FLOORS

Here are a few of the many satisfied mills who have tested our service:

BIBB MFG. CO., PORTERDALE, GA. (OSPREY)
WINNSBORO MILLS, WINNSBORO, S. C.
COVINGTON COTTON MILLS, COVINGTON, GA.
MILL NO. 2 NEWNAN COTTON MILLS, NEWNAN, GA.
MILL NO. 1 ANCHOR DUCK MILLS, ROME, GA.
SCOTTDALE MILLS, SCOTTDALE, GA.
HILLSIDE COTTON MILLS, LA GRANGE, GA.
MILL NO. 1 AND 2, TALLADEGA MILLS, TALLADEGA, ALA.
ROYAL MILLS, CHARLESTON, S. C.

C. P. MURPHY'S SONS

ESTABLISHED 42 YEARS ATLANTA, GA.

"Cotton Mill Machinery Calculations"

EVERY Textile Man should have these reference books. They cover in a detailed and thorough manner all calculations necessary to be made on any cotton mill machinery manufactured in the United States and constitute one of the best references on the subject obtainable.

The two volumes are illustrated with 45 diagrams and contain 21 reference tables.

As the value of a book lies in its contents and not in a fancy cover, we have put these two volumes out in a strong, serviceable paper binding. You can secure them free in conjunction with a subscription to COTTON.

Write for circulars and full information.

COTTON,
ATLANTA, GEORGIA

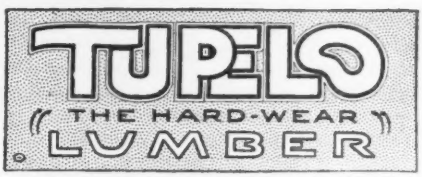
Tough Tests for TUPELO

"THE HARD SOFT WOOD."

For a factory floor where the wear is **hard**
and continuous—

For a warehouse floor where the wear is **harder**
because of heavy loads coming and going—

For a platform, where the wear is **hardest**
with heavy truck wheels constantly rolling back and forth—



stands the gaff, because of its tough, closely "knitted" or "involved" grain, which prevents it from "slivering" or "kicking" up.

TUPELO is good looking, too. Takes a fine finish.

Before placing an order for FLOORING for any use, write us and get the complete facts about TUPELO.

SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION
805 Poydras Bldg., New Orleans, La., or 805 Graham Bldg., Jacksonville, Fla.

Here is the Paint that LASTS

ZEMCO-LITE with its base of pure White Portland Cement is the permanent coating for the walls and ceilings of mill buildings. When applied, it STICKS AND STAYS—does not dry up and fall off, neither does it peel, crack or blister. When ZEMCO-LITE is applied, it is literally like cementing a white finish on your walls. And ZEMCO-LITE **LASTS**—when once put on, just forget it. Not affected by moisture, weather, water, steam or acid fumes.

ZEMCO-LITE is NOT EXPENSIVE. Regardless of its amazing qualities, it is a quality cement paint at a reasonable price. One reason ZEMCO-LITE is so economical is because it is MIXED WITH WATER. Cement is mixed with water. So is ZEMCO-LITE. ZEMCO-LITE acts just like cement. Mix just enough water—apply it with a brush or sprayer and the job is done. It's done to last, too. Not a periodical job of painting when you use ZEMCO-LITE.

We don't want you to think that we have exaggerated our claims in the least. We don't say ZEMCO-LITE will last forever and ever. But just try it in **your** mill, and see if you ever use any other kind of mill white. We simply leave it up to you. Try it out.

American Cement Paint Co., Chattanooga, Tenn.

Zemco-lite TRADE MARK *"The Cement Paint"*

100 INCHES OF BELT

can be laced with one box of

BRISTOL'S

Patent Steel Belt Lacing

A HAMMER is the only tool necessary—you already have that.

Saves time—saves money—always ready.

Have you seen Bulletin J-713?

THE BRISTOL COMPANY

WATERBURY, CONN.

Boston New York Philadelphia Pittsburgh
Detroit Chicago St. Louis San Francisco

EUROPEAN PLAN

Rooms 600 Baths

Headquarters in Detroit for

OLD COLONY CLUB
DETROIT AUTOMOBILE CLUB

. . . DAILY RATES . . .

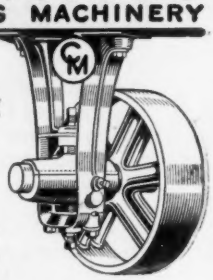
$2.50 up single
$5.00 up double
Two Floors of Agents' Sample Rooms—$5.00 per Day

Table d'Hote Dinner, $1.25
Business Men's Lunch, 65c

HOTEL TULLER

CAFETERIA O. C. FROMAN, Mgr. GRILLE

CRESSON-MORRIS
POWER TRANSMITTING MACHINERY



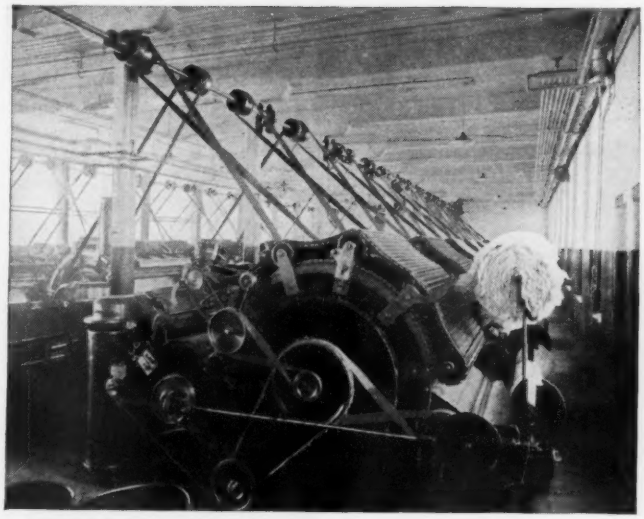
Power transmitting machinery
Shafting
Rope transmission
Machine moulded and cut iron and steel gears for heavy service.
Complete plant equipment.
Engineers; founders; machinists.
Sugar centrifugals.

CRESSON-MORRIS CO.

18th Street and Allegheny Ave.
PHILADELPHIA, PENNSYLVANIA

2189-B

Sixty Years Experience as Engineers-Founders-Machinists



An actual saving of $1893.14 in belt expense

This is the experience of a manager of a famous mill who standardized on Graton & Knight Belting. He made this decision in August of 1921. And up to the present time, whenever a belt replacement has been nesessary, a Graton & Knight Belt has been installed.

This is the result:

In the first six months of 1922 he saved in belt expense over the same period as in 1921, *more than six hundred dollars.*

In the first six months of 1923 he saved over the year before, *over twelve hundred dollars.*

The figures for the first six months of this year against those of 1921, the year before he standardization on Graton and Knight Belts, show an *actual saving of $1893.14.*

Naturally enough, this Manager, after over twenty years of experience, has stopped belt experiments. He knows that Graton and Knight belts mean economy to him—actual savings in dollars and cents.

For *your* particular belting problems, whatever the requirements of your plant may be, in the Graton and Knight Standardized Series there are belts of the proper weight, thickness and flexibility to transmit the right amount of power.

The book, "The Standardization of Belting," tells how, through constant analyzation of power requirements, we have developed a series of belts to meet every condition, to meet them so much better that economies like the one above result. When you write for the book tell us the type of transmission you are interested in.

A Graton and Knight engineer will gladly consult with you, giving you the benefit of the widest belting experience in the world.

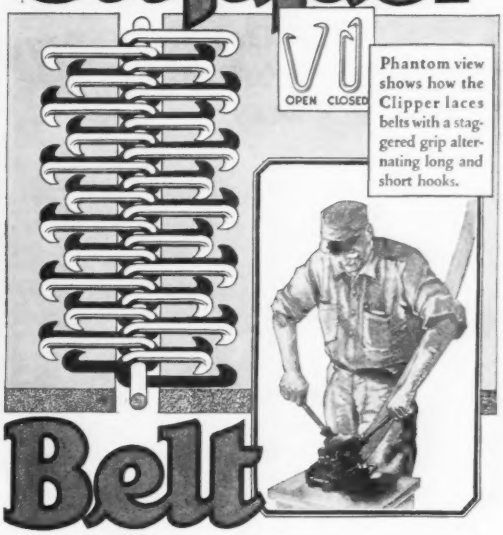
GRATON & KNIGHT
WORCESTER, MASS.

*Name on Request.

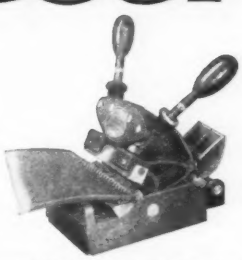
G&K

Branches and distributors in all principal cities throughout the world.

Clipper Belt Lacer



To let you test the advantages of Clipper Belt Lacing in your own plant and on your own belts, we offer you a Thirty Day Trial Absolutely Free.



STANDARD EQUIPMENT THE WORLD OVER

Clipper Belt Lacer Co.
Grand Rapids, Michigan

Anyone can lace a belt with the

Clipper

CLIPPER BELT LACER CO., Grand Rapids, Mich.

- ☐ Please send Clipper Belt Lacer on 30 days trial.
- ☐ Please have salesman call and demonstrate Clipper Belt Lacer.
- ☐ Please send full information regarding Clipper Belt Lacer.

Name _____

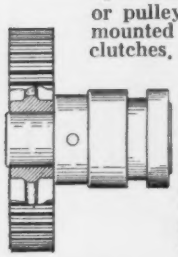
Address _____

THE JOHNSON FRICTION CLUTCH

AS USED ON

THE WERNER
TWO-ROLL HEAVY SQUEEZER
FOR PIECE GOODS

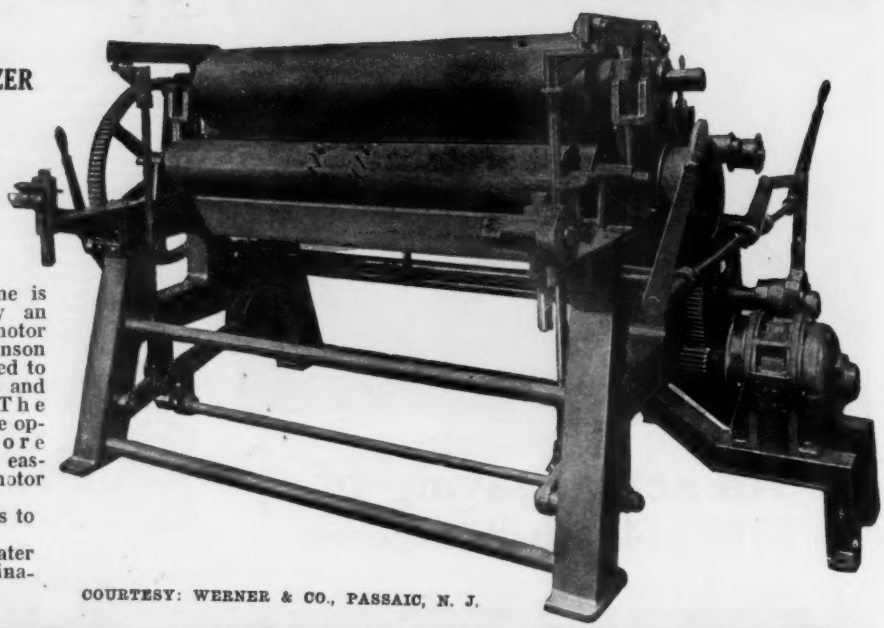
Spur Gears, sprockets or pulleys are easily mounted with our clutches.



SINGLE CLUTCH WITH SPUR GEAR

This machine is operated by an individual motor and the Johnson Clutch is used to quickly stop and start it. The clutch can be operated more quickly and easily than a motor can be stopped or started.
The Johnson Clutch is a means to better machinery.
Better machinery means greater production. A saving combination.

WRITE FOR CATALOG "G"



COURTESY: WERNER & CO., PASSAIC, N. J.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN.

ALMOST AS GOOD AS TANNATE

BETTER THAN BEST OAK BELT

MANY textile mills have found Rhoads "Stronghold" Belting very reliable and economical. It is well adapted to small, high-speed pulleys.

From a Philadelphia mill comes the report that "Stronghold" is the best belt they ever had for winding frames. It clings to the pulley better than oak, makes better bobbins and lasts longer.

It is made from carefully selected side leather of Rhoads Tannate tannage. It has the grip and durability of the Tannate, costs less; and full satisfaction is guaranteed. Give it a trial.

The finishing touch on a Rhoads Belt lap, in preparation for cementing is put on by this little skiving machine.
The flat belt is a Stronghold, the other Tannate Round.

J. E. RHOADS & SONS

PHILADELPHIA—30 N. Third St.
NEW YORK—130 Beekman St.
CHICAGO—330 W. Randolph St.
Factory and Tannery: WILMINGTON, DEL.

BETTER NON-FLUID OIL LUBRICATION

ARE YOU LUBRICATING ON THE "FOURTH DROP?"

Expert Observers declare that three drops of fluid oil out of every four fed to bearings either never reach the bearings or else pass through and drip away unused.
Every drop lubricates, if you use

TRADE MARK REGISTERED IN
NON-FLUID OIL
UNITED STATES PATENT OFFICE

MODERN TEXTILE LUBRICANTS

that won't drip or waste away.
NON-FLUID OIL stays in the bearing—every drop is used—insuring more perfect because more continuous lubrication and since each application lasts so much longer than liquid oil—

NON-FLUID OIL costs less per month for better lubrication.

And oil stained product is practically abolished—NON-FLUID OIL stays in the bearings and off the cotton.

New York & New Jersey Lubricant Co.

401 Broadway New York
Southern Agent, L. W. Thomason, Charlotte, N. C.
Ample Stocks at Our Branches
Charlotte, N. C. Greenville, S. C.
Atlanta, Ga. New Orleans, La.

AT LESS COST PER MONTH

Are you interested enough to have it proven?

MANUFACTURERS OF
Chapman BALL BEARINGS
"You Pay for them Whether You Buy them or Not"

State your case We will give you evidence.

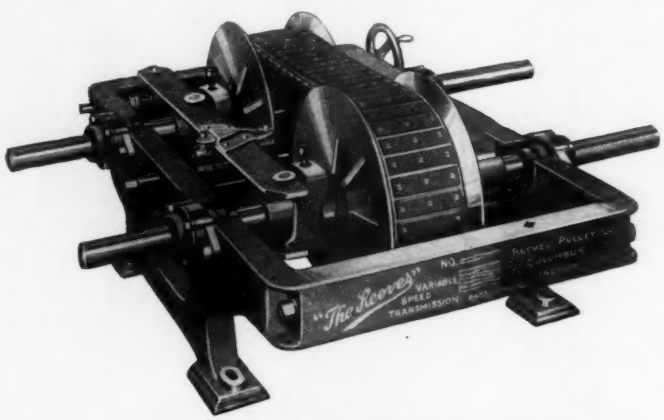
Would you take the money—if we put it in your hand?

A sum equivalent to 15% or more of your yearly power costs—would it be very much?

Chapman Ball Bearings—instead of the old style babbitted or bushed bearings—on your lineshafts will save this amount for you each year—and will continue to do so ***for a whole lifetime.***

THE TRANSMISSION BALL BEARING CO., INC.
ELIMINATORS OF BEARING TROUBLES

1050 MILITARY RD. BUFFALO, N. Y.



"The Reeves"

Complete
Ball
Bearing
VARIABLE
SPEED
TRANSMISSION

THE MOST EFFICIENT VARIABLE SPEED DEVICE EVER MANUFACTURED

A compact, mechanical device for application to any textile machine on which adjustable speeds are required. It is installed on floor, platform or ceiling between the source of power and the machine to be regulated.

It enables the operator of the machine to secure exactly the speed required for the material in operation. Any one speed may be maintained indefinitely or the speeds may be changed as often as necessary.

Provisions are made to change the speed of Transmission by hand wheel, sprocket and chain, electrically remote or automatically. Where continuous process of manufacturing cloth is employed "The Reeves" Automatic Control has proven in every instance entirely satisfactory. It will be to your interest to write for bulletin, C-2055 and learn more about this new automatic, sensitive speed control.

REEVES PULLEY COMPANY COLUMBUS, IND.

Easiest Method Proves to Be Cheapest

Many an engineer, upon seeing an installation of our equipment for the first time, has wondered why he did not think of such a system himself—it's so simple.

And yet its very simplicity has revolutionized the entire coal handling industry and established a new minimum in power and labor costs.

The *Godfrey System* is simple for the reason that it follows the line of least resistance. Instead of forcing its way into the pile, it allows the coal to flow of its own accord by utilizing the law of gravity. When thus filled, the *Godfrey* bucket is raised and conveyed to the point of unloading, where it automatically discharges its contents.

One man can unload and store a fifty-ton car of coal in an hour and a half, with a *Godfrey Conveyor*, at a power and labor cost of from five to seven cents a ton, to say nothing of the saving in demurrage charges and freedom from labor difficulties.

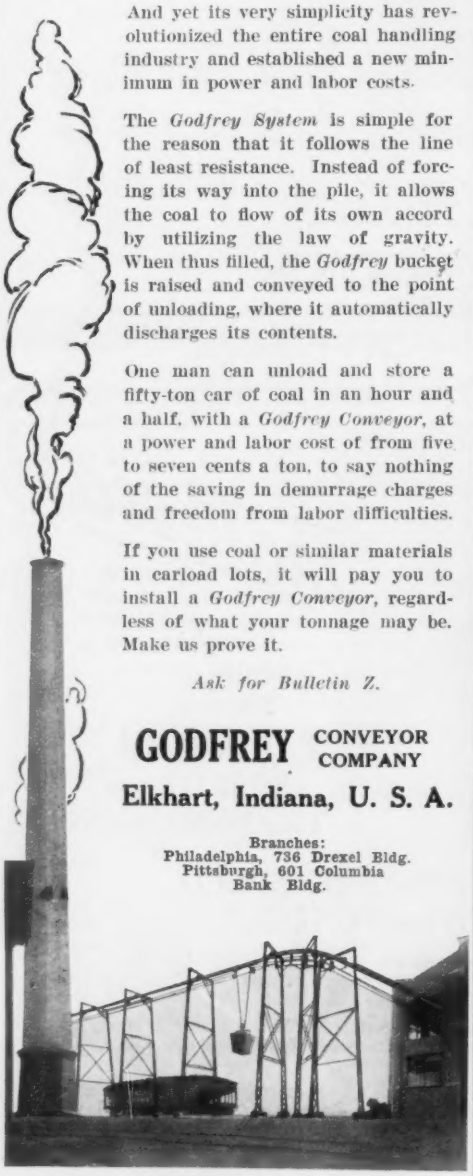
If you use coal or similar materials in carload lots, it will pay you to install a *Godfrey Conveyor*, regardless of what your tonnage may be. Make us prove it.

Ask for Bulletin Z.

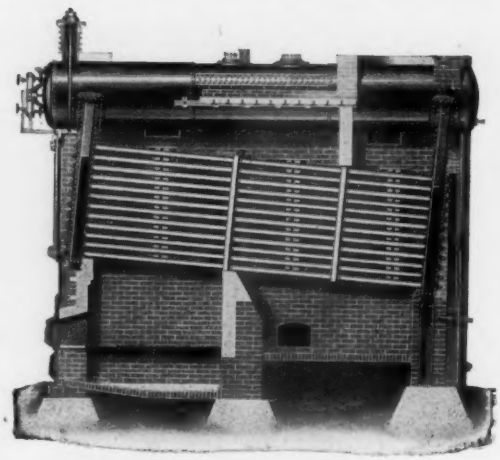
GODFREY CONVEYOR COMPANY

Elkhart, Indiana, U. S. A.

Branches:
Philadelphia, 736 Drexel Bldg.
Pittsburgh, 601 Columbia Bank Bldg.

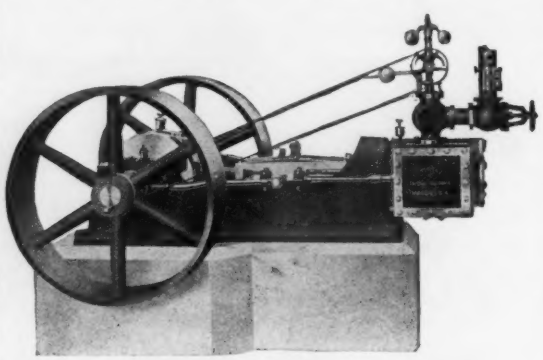


WATER TUBE BOILERS



HORIZONTAL WATER TUBE BOILERS
VERTICAL WATER TUBE BOILERS
TUBULAR AND MARINE BOILERS
STEEL CASINGS, SMOKE STACKS

THE CASEY-HEDGES CO.
CHATTANOOGA, TENN.
Quick Shipment Our Specialty. Send for Catalogs.



J. S. Schofield's Sons Co.
Macon, Georgia

MANUFACTURERS OF

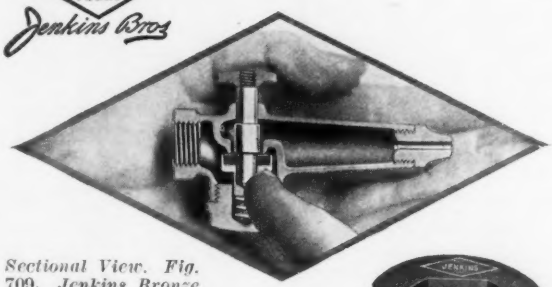
High Pressure Return Tubular Boilers, High Grade Stationary Steam Engines, Tanks, Stacks, Stand Pipes.

Heavy Castings and Wrought Iron Works.

Made for maximum service not merely the average

TRADE JENKINS MARK

Jenkins Bros



Sectional View. Fig. 709. Jenkins Bronze Air Gun for cleaning purposes. Fitted with Jenkins renewable disc.

Jenkins renewable Discs are compounded for many different uses. Specify the intended service when ordering.

Valves that prevent air waste

The Jenkins RENEWABLE Disc with which these valves are fitted, takes up the wear of constant use and insures a tight valve. It has very long life, and when necessary can be easily and quickly renewed with the valve left in the line. The disc prevents air waste because it always forms a perfect contact on the seat. Furthermore, all metal parts are interchangeable.

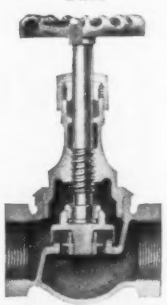
Jenkins Valves provide reliable, enduring service. They save time and prevent trouble. Their interchangeable parts and long life make it pay to standardize on Jenkins Valves.

Valves in bronze, iron, and steel for all requirements. At supply houses everywhere.

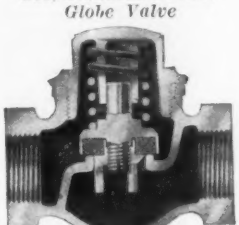
JENKINS BROS.

New York Boston Philadelphia Chicago Montreal London

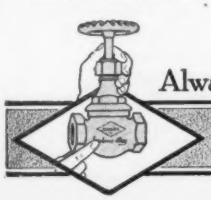
Fig. 709. Bronze Air Gun.



Sectional View, Fig. 106, Standard Bronze Globe Valve



Sectional View. Fig. 675. Standard Bronze Horizontal Check Valve with spring for Air Compressor Service.



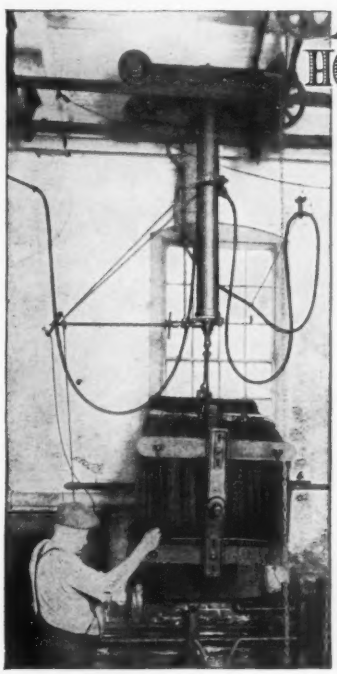
Always marked with the "Diamond"

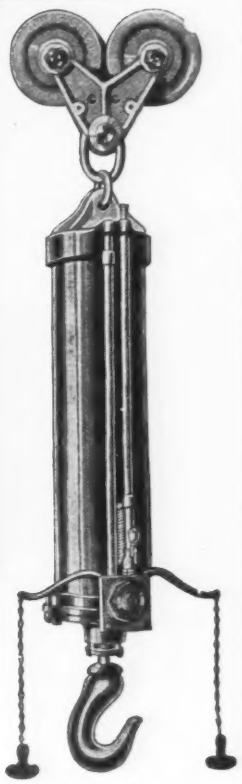
Jenkins Valves

SINCE 1864

CURTIS

AIR HOISTS





Lift it with air"

Used in The Textile Industry

Curtis one man All Steel Air Hoists and Curtis Roller Bearing Trolleys are effecting important economies in leading textile mills throughout the country.

Why not install a Curtis Air Hoist and operate it with the air you now have available? The wide variety of uses to which Curtis equipment can be most economically applied is worthy of your immediate investigation.

Curtis Pneumatic Machinery Co.

1571 Kienlin Ave. St. Louis, Mo.

Branch Office

532-R Hudson Terminal New York

CURTIS AIR COMPRESSORS-HOISTS-TROLLEYS-CRANES ST. LOUIS C.P.M.Co.

Established 1854

Condensation—a Problem Today—an Asset Tomorrow

Today it may be clogging your slashers, dryers, presses or mill heating system, retarding steam circulation, lowering production and cutting your profits. But install a Morehead Back-to-Boiler System and—

Tomorrow every drop of condensation will drain from your equipment as it forms. Temperatures will rise, and with them production and profits. The condensation—piping hot—will be available for boiler feed water and can be returned to the boiler **without pumps.**

Thousands of Morehead installations are yielding big returns to their owners in increased production and lower fuel bills. One can do the same for you. Write for complete information and proof.

MOREHEAD MANUFACTURING CO.
Dept. C
DETROIT MICHIGAN
(119)

Morehead
"BACK-TO-BOILER-SYSTEM"
POSITIVELY DRAINS ALL TYPES OF STEAM APPARATUS. DELIVERS CONDENSATION AND FEED WATER TO BOILERS UNDER ALL CONDITIONS AT MAXIMUM TEMPERATURE

BOILERS

of the

Water Tube and Tubular Types

OUR SPECIALTY

WALSH & WEIDNER BOILERS with our improved Steel Casing make the ideal Steam Plant. The cost of installation is moderate, the plant looks neat, cost of repairs is slight and they will save from 10 to 25% of your fuel bill.

We also manufacture Tanks of all description, Towers and Tanks, Steel Stacks, Steel Breeching, Smokestacks, Structural Steel and Plate Steel Work.

Write for our new catalog.

The Walsh & Weidner Boiler Co.

CHATTANOOGA, TENN.

New York Chicago San Francisco Memphis Havana
Kansas City Jacksonville New Orleans

LUNKENHEIMER
Pop Safety Valves

To correct design, proper materials, adequate relieving capacity, adjustable relief, prompt seating of the disc after the required pressure reduction, free action of the disc without cramping or sticking, easy access to the working parts and renewability of all parts, can be attributed the reliable and economic performance of these valves.

Made in Bronze, Iron Body Bronze Mounted and Steel, with encased or exposed spring in all standard sizes and for all prevailing pressures and temperatures.

"America's Best since 1862"
THE LUNKENHEIMER CO.
"QUALITY"
LARGEST MANUFACTURERS OF HIGH GRADE ENGINEERING SPECIALTIES IN THE WORLD
NEW YORK CHICAGO CINCINNATI, U.S.A. BOSTON LONDON
EXPORT DEPT. 123-125 LAFAYETTE ST. NEW YORK

9-20-10

Commission Merchants, Yarn Dealers, Cotton Dealers and Brokers, Banks, Etc.

Dependable Cotton Yarns

Product of

FLINT MANUFACTURING CO. Many world-famed knitted and woven fabrics are made in whole or in part of Flint fine yarns. At this plant we spin combed 28s to 80s, single and ply, suitable for knitting, weaving, lace and converting purposes.

Quotations and samples promptly submitted.

H. A. FLORSHEIM, General Sales Manager

225 Fifth Avenue **New York, N. Y.**

Also exclusively representing

GRAY MFG. CO. PARKDALE, MILLS, INC.
ARLINGTON COTTON MILLS ARROW MILLS, INC.
MYRTLE MILLS, INC. ARKRAY MILLS, INC.

Weimar Bros.

Phone Connections
Works, 2046-48 Amber Street,
PHILADELPHIA, PA.

MANUFACTURERS OF

Cotton Mercerized Tapes, Spool Tapes, Bindings and Narrow Fabrics for Underwear and other Trades.

WOODWARD, BALDWIN & CO.

DRY GOODS

Commission Merchants

43-45 WORTH STREET, NEW YORK

HUGHES FAWCETT

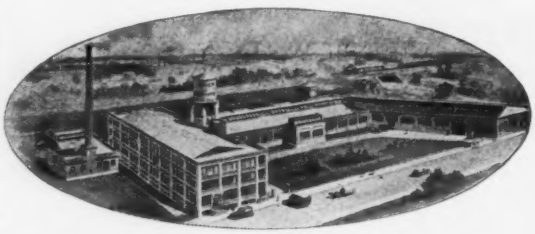
IMPORTER AND COMMISSION MERCHANT

LINEN YARNS
For Weaving, Knitting and all Purposes.

TURKEY RED YARNS
For Towel Borders, Towellings and Bleaching Cloth

Linen Jacquard Harness Twine
And Every Description of Linen Thread and Twine

115 Franklin Street, : NEW YORK



View of our Mercerizing and Bleaching Plant

BOGER & CRAWFORD

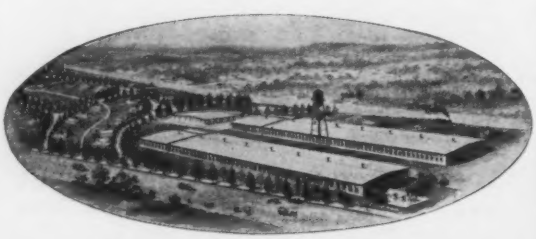
Established 1908

Spinners, Bleachers, Dyers and Mercerizers of High Grade Combed Yarns

By using our Spinning and Mercerizing you are always assured of a standard product.

"From the Cotton Field Direct to You"

Main Office, Factory and Warehouse
J and East Venango Sts., PHILADELPHIA



Spinning Mills, Lincolnton, N. C.

J. H. LANE & CO.

Tire Fabrics	Cord Fabric
Enamelling Duck	Wide Drill
Sheeting	Osnaburg

Special Constructions
Cotton Fabrics

250 W. 57th St.
NEW YORK

225 West Adams St.
CHICAGO

F. W. LAFRENTZ & COMPANY

announce that they will handle all Auditing, Accounting, Systematizing and Tax Work heretofore done by them under the name of The American Audit Company.

F. W. Lafrentz, C. P. A. (N. Y.)
A. F. Lafrentz, C. P. A. (N. Y.)
C. B. Bidwell, C. P. A. (Ga.)
AT
1013 Fourth National Bank Bldg.
Atlanta, Ga.
'Phone Walnut 0869

CARVER-BEAVER YARN CO.
Successors to A. D. SALKELD & BRO., Inc.
ALL NUMBERS COTTON MERINO **YARNS** ALL COLORS WOOL WORSTED
366 BROADWAY, NEW YORK

STENCILS FOR COTTON SHIPPERS, COTTON MILLS MERCHANTS & MANUFACTURERS - ALSO BRUSHES, INK, MARKING POTS
RUBBER STAMPS, NOTARIAL, CORPORATION SEALS
ATLANTA RUBBER STAMP & STENCIL WORKS
OFFICE 33 LUCKIE ST. WORKS 350 EDGEWOOD AVE.
P.O. BOX 859 OLDEST STENCIL AND STAMP HOUSE IN GEORGIA ATLANTA, GA.

Callaway Mills

INCORPORATED

345 Madison Avenue

Phone—Murray Hill 7801

NEW YORK

SELLING AGENTS
Unity Cotton Mills
Milstead Manufacturing Co.
Elm City Cotton Mills
Manchester Cotton Mills
Hillside Cotton Mills
Unity Spinning Mills
Villa Rica Cotton Mills
Athens Manufacturing Co.

Boston Representative
M. R. ABBOTT
110 Summer Street

Chicago Representative
RAY T. JOHNSON
226 W. Adams Street

J. B. JAMIESON CO.

77 SUMMER ST.

BOSTON MASS.

Commission Merchants

COTTON YARNS

of all descriptions for weaving and knitting.

We solicit accounts.

Wire or write us any offerings.

Time Proven Quality, In Cotton Yarns

For a quarter of a century we have been spinning good cotton yarns whose strength, uniformity, cleanliness and better weaving qualities can be vouched for by some of the country's best known manufacturers of textile products.

26 to 40s Carded — *Skeins, Warps*
50 to 60s Combed — *Cones, Tubes*

Lenoir Cotton Mills
Hudson Cotton Mfg. Co
Whitnel Cotton Mill Co.
Moore Cotton Mill Co.
Nelson Cotton Mill Co.

Address inquiries to the main office

LENOIR, NORTH CAROLINA

J. L. NELSON, *Treasurer*
J. L. NELSON, JR., *Assistant Treasurer*

ESTABLISHED 1872

H. & B. BEER

NEW ORLEANS

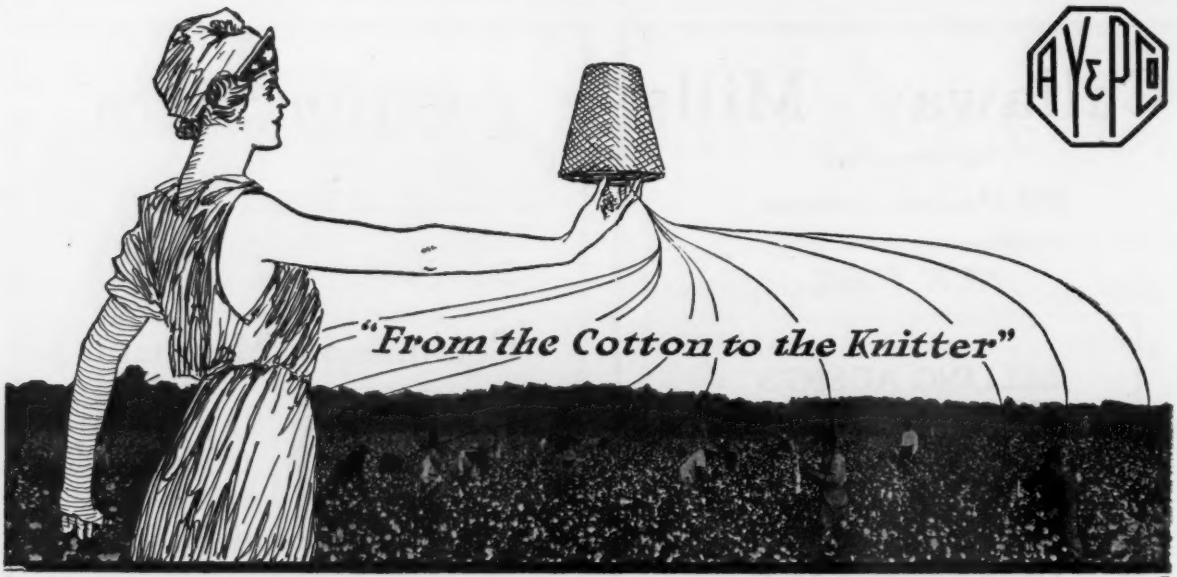
HENRY BEER — EDGAR H. BRIGHT
J. WILLIAM BARKDULL — C. MORGAN ABRAMS

MEMBERS OF

New Orleans Cotton Exchange
New Orleans Future Brokers Association
New York Stock Exchange
New York Cotton Exchange
New York Coffee Exchange
New York Produce Exchange
Chicago Board of Trade

Associate Members of the Liverpool Cotton Association

Private Wires to Principal Points



AY&PCo

AMERICAN YARN & PROCESSING CO.

MOUNT HOLLY, N. C.

SPINNERS AND MERCERIZERS

HIGH GRADE COMBED AND CARDED YARNS—16s to 80s

Our Mercerized Yarns Are the Product of Our Own Mills

General Office, Mt. Holly, N. C.

Representatives

H. B. ROBIE, 346 Broadway, New York City **FORREST BROS., Forrest Bldg., Philadelphia**

CLASSIFIED ADVERTISING

RATES

DISPLAYED.

"For Sale" and all other advertisements using bold face type or otherwise displayed, $2.00 per inch per insertion

Rates for larger spaces furnished on application.

Specialty Account Wanted.

Wanted: One good textile machinery or equipment specialty by an organization of experience, continually calling upon the Southern cotton mills. J. Kirk Rowell, 511 Atlanta Trust Bldg., Atlanta, Ga.

New and Second Hand

ENGINES

Corliss Automatic and Slide Valve

BOILERS

Pumps, Hoisting Engines, Gas and Gasoline Engines.

MACHINE TOOLS

Lathes, Planers, Shapers, Drill Presses, etc.

WOOD WORKING

Planers, Molders, Band Saws, etc.

ELEC. MACHINERY

Dynamos and Motors

AND SUPPLIES OF ALL KINDS

FRANK TOOMEY, Inc.,

127-31 N. Third St.,

Philadelphia, - Pennsylvania

WATER POWER DEVELOPMENT FOR SALE

One 300 kilowatt (400 H.P.) development, (now in operation) ideally adapted for operation of small textile mill or other industrial plants is offered for sale. Four years old; concrete dam; 2 water wheel generators; steel and cedar penstock. Located near town of 3000 population; on main line of large railroad; in best of Piedmont section of the Southeast. Labor supply plentiful. Details upon request.

Address:

J. H. Reynolds

Gainesville, Ga.

MILL MACHINERY

OFFERED AT BARGAIN PRICES

823 H. P. BOILERS

823 H.P. Class M 30 Babcock & Wilcox Stirling Boilers. 200 lbs. pressure 630—3¼ in. 10 gauge tubes. Drums, double riveted. double strap butt joint. Space occupied by boiler 18′ wide, 23′ deep, 29′9″ high. Complete with Westinghouse Stokers, forced draft fans, Vulcan soot blowers and all accessories. Boilers operated less than 90 days.

TANKS

Steel Tanks of every type and size from 96 gallons to 55,700 gallons. Made of plates ¼ inch to ⅜ inch thick. Suitable for storage purposes.

SCALES

Howe and Fairbanks Scales. Capacities 600 lbs. to 100 tons. Guaranteed to be in good condition.

MOTORS

Slightly Used Motors, 3 ph., 60 cy., 440 v., 7½-75 hp., General Electric, Allis-Chalmers and Westinghouse.

DIGESTERS

Welded Steel Digesters. Capacity 1300 cu. ft. Inside diameter 8′. length overall 27′. Complete with cast iron supporting ring, hoppers, guides and all accessories.

FORCED DRAFT FANS

Buffalo Forced Draft Fans, Type TD-9½, 100,000 cu. ft. capacity direct connected to 225 Moore Steam Turbine and Reduction Gear. Mounted on common base. Only slightly used.

Much of the special cotton conditioning machinery used in the manufacture of powder is still available at the Old Hickory Powder Plant.

Cotton Dryers

Sargent No. 21 six section 8 foot Cotton Dryers. Overall dimensions 99′4″ long, 15′5″ wide, 7′10″ high. Equipped with Model "M" Self feeder. Hot air drawn through belt by 33″ exhaust fans. Constructed throughout of metal angles and plates.

Mixing Pickers

Sargent Cylindrical type 48″ Mixing Pickers, equipped with single pair fluted feed rolls, 3½″ diameter. Cylinder provided with 6 heavy steel bars on lugs bolted to spider. Capacity 600 to 800 lbs. per hour.

Cotton Washers

Sargent 48″ Special Cotton Washers or Rinsers. Complete with cast iron frame, pans, squeeze rolls, kicker and conveyor.

Feeders

Sargent 48″ Model "M" Feeders for Sargent Dryers.

Concentrators

Noble and Wood Concentrators, right and left hand cylinder washers with octagon cylinder, diameter 44″, length 42″. Rotates at 6 R.P.M. Vat is 4′1½″ wide, 6′9″ long, 2′9″ high.

Wringers

42″ American Tool and Machine Co. Centrifugal Wringers. Complete with 42″ perforated steel basket shell, with steel top, basket 22½″ inside depth, ⅜″ steel Wringer direct connected to 40 H.P. Motors.

36″ American Tool and Machine Co. Belt Driven Centrifugal Wringers. Each set arranged in batteries of three.

350 H.P. ENGINES

Corliss Engines. Maker Allis-Chalmers Co. 350 H.P. 18 in. x 36 in. double eccentric, semi-high speed. 125 R.P.M., simple Corliss belted type, designed to operate on 140 lbs. steam pressure with 1½ lbs. back pressure. Double eccentric allows cut off up to 75 per cent of stroke. Flywheel 11 ft. diameter by 32 in. face. Complete with Phoenix individual oiling system. Type R, size 30, made by Richardson-Phoenix Co.

VALVES AND FITTINGS

New and slightly used Crane, Jenkins, Chapman and Walworth Flanged and Screwed Valves, sizes ¼″ to 16″. Fittings of all kinds and classes; screwed up to 3″ and flanged from 3″ to 16″.
In stock for immediate shipment.

TRANSMISSION

Assembled line shafts.
Standard couplings.
Shaft Hangers.
B. & S. post hanger frames.
Ring-oiling bearings.
Capillary-oiling bearings.
Standard-oiling bearings.
Rigid Pillow Blocks.
Standard pillow blocks.
Common flat boxes.
Rigid split vertical bearings.
Split friction clutches.
Solid friction clutches.
Spiral jaw clutches.
Split safety collars.
Solid safety collars.
Lag screws, bolts and nuts.
Steel shafting, 1 7/16 inches up to 5 inches.
Cast iron floor stands.

Write for Specifications and Quotations

OLD HICKORY POWDER PLANT

Jacksonville, Tenn.

Buyers' Index

ACETYLENE GENERATING APPARATUS.
Oxweld Acetylene Co.

ACETYLENE WELDING APPARATUS.
(See Welding Apparatus.)

ACIDS.
(See Dyestuffs and Chemicals.)

ACID GENERATOR (SULPHUROUS).
Chemical Textile Engineers, Inc.

ACCOUNTANTS.
Ernst & Ernst.
La Frentz & Co., F. W.

ACCOUNTING SYSTEMS.
Ernst & Ernst.

ADDING MACHINES.
Monroe Calc. Mch. Co.

AERATING AND CLEANING MACHINE.
Murray Co., The.

AIR WASHERS.
American Blower Co.
Buckeye Blower Co.
Carrier Eng. Corp.
Parks-Cramer Co.
Sturtevant Co., B. F.

AIR COMPRESSORS.
(See Compressors.)

AIR CONDITIONING SYSTEMS
(See Humidifying Apparatus.)

ALBONE.
Roessler & Hasslacher Chemical Co.

ALKALIES.
(See Dyestuffs and Chemicals.)

ALUM.
(See Finishing and Sizing Materials.)

ANILINE COLORS.
(See Dyestuffs and Chemicals.)

ANTI-CHLORINE.
(See Dyestuffs and Chemicals.)

ANTI-CHLORINE ACID GENERATOR.
Chemical Textile Engineers, Inc.

APRONS—RUB.
Bond Co., Chas.

ARCHITECTS AND ENGINEERS.
Dallis, Park A.
Lockwood, Greene & Co.
McCrary Co., J. B.
Robert & Co.
Sirrine, J. E.

ARMATURE REWINDING.
(See Repairing—Electrical.)

ARTWORK.
Jacobs & Co.

ASH HANDLNG MACHINERY.
(See Coal Handling Machinery.)

ASPHALT SLATE SHINGLES.
(See Slate Asphalt Roofing.)

AUDITORS AND ACCOUNTANTS.
Ernst & Ernst.
La Frentz & Co., F. W.

AUTO TRUCKS.
(See Trucks—Auto.)

AUTOMATIC CONTROLLERS (TEMPERATURE).
(See Temperature Regulators.)

AUTOMATIC LOOM ATTACHMENTS.
(See Loom Attachments.)

AUTOMATIC FEEDS FOR COTTON.
Phila. Drying Mchy. Co.
Proctor & Schwartz, Inc.
Saco-Lowell Shops.
Sargent's Sons Corp., C. G.
Whitin Mch. Works.

AUTOMATIC SCALES.
(See Scales.)

AUTOMOBILES.
White Co.

AWNINGS.
Smith Mfg. Co.

BABBITT METAL.
Ryerson & Son, Inc., Jos. T.

BACKWASHERS.
Sargent's Sons Corp., C. G.

BAGS (COTTON PICKER).
Smith Mfg. Co.

BAGS (COIN OR MONEY).
Smith Mfg. Co.

BAGS (COAL).
Smith Mfg. Co.

BALL BEARINGS.
Aldrich Mch. Works.
Dodge Mfg. Co.
Fulton Supply Co.
Fafnir Bearing Co.
Hyatt Roller Bearing Co.
Skayef Ball Bearing Co.
Transmission Ball Bearing Co.
U. S. Ball Bearing Co.

BALL BEARING HOUSINGS.
Aldrich Machine Works.
Fafnir Bearing Co.
Fulton Supply Co.
Transmission Ball Bearing Co.
U. S. Ball Bearing Co.

BALE BAND BUCKLES.
(See Box Strappings & Buckles.)

BALE OPENERS.
(See Openers.)

BALING MACHINES.
Crompton & Knowles Loom Wks.
Draper Corporation.
Economy Baler Co.
Logemann Bros.
Rex Eng'g Corp.
Saco-Lowell Shops.

BALING PRESSES.
(See Presses.)

BANDAGES, TAPES, ETC.
American Textile Banding Co.
Weimar Bros.

BANDAGE & TAPE MACHINES
Foster Machine Co.
Whitin Mch. Wks.

BANDS.
(See Tapes.)

BANKS.
American Trust Co.

BARS (IRON AND STEEL).
Ryerson & Son, Inc., Jos. T.

BAROMETERS.
Taylor Instrument Co.

BARRELS—FIBRE.
(See Fibre Products.)

BASKETS—MILL.
(See Boxes—Mill.)

BATH CABINET—SHOWER.
Crane Co.
Sanymetal Products Co.

BATTERIES (ELEC.)
(See Storage Batteries.)

BEAMS.
Allen Co.
Mossberg Pressed Steel Corp.
U S Bobbin & Shuttle Co.

BEAM HEADS.
Allen Co.
Jordan Mfg. Co.
Mossberg Pressed Steel Corp.
U S Bobbin & Shuttle Co.

BEAMS (STEEL).
Ryerson & Son, Inc., Jos. T.

BEAMING AND WARPING MACHINERY.
(See Warpers and Warping Machinery.)

BEARINGS.
Aldrich Machine Works.
Cresson-Morris Co.
Dodge Mfg. Co.
Fulton Supply Co.
Fafnir Bearing Co.
Hyatt Roller Bearing Co.
Renold, Inc., Hans.
Ryerson & Son, Inc., Jos. T.
Skayef Ball Bearing Co.
Transmission Ball Bearing Co.
U. S. Ball Bearing Co.

BELTING (LEATHER, CANVAS AND RUBBER).
American Supply Co.
Bond Co., Chas.
Fulton Supply Co.
Graton & Knight Mfg. Co.
Rhoads & Sons, J. E.
Williams & Sons, I. B

BELTING—CHAIN
Dodge Mfg. Co.
Fulton Supply Co.
Link-Belt Company.
Morse Chain Co.
Renold, Inc., Hans.

BELTING (ROUND—LEATHER).
Bond Co., Chas.
Graton & Knight Mfg. Co.
Rhoads & Sons, J. E.

BELTING—ROPE.
(See Rope Transmission.)

BELT CONVEYORS.
Dodge Mfg. Co.
Fulton Supply Co.
Link-Belt Company.
Morse Chain Co.

BELT DRESSING.
Bond Co., Chas.
Dixon Crucible Co., Jos.
Fulton Bag & Cotton Mills.
Graton & Knight Mfg. Co.
Rhoads & Sons, J. E.
Williams & Sons, I. B.

BELT FASTENERS.
Bristol Co.
Clipper Belt Lacer Co.
Detroit Belt Lacer Co.
Fulton Supply Co.

BELT LACING (LEATHER).
Bond Co., Chas.
Dodge Mfg. Co.
Fulton Supply Co.
Graton & Knight Mfg. Co.
Rhoads & Sons, J. B.
Williams & Sons, I. B.

BELT TIGHTENERS.
Dodge Mfg. Co.
Fulton Supply Co.
Link-Belt Company.
Rhoads & Sons, J. E.
Wood's Sons Co., T. B.

BELT TIGHTENER DEVICE FOR CONE PICKERS.
Bahan Textile Mch. Co.

BENCHES MECHANICS' CLOTH INJECTORS, ETC.
Allen Co.
Lupton's Sons Co., David.

BENCH DRAWERS.
Lupton's Sons Co., David.

BENCH LEGS (PRESSED STEEL).
Lupton's Sons Co., David.

BENCHES (PARK AND PLAYGROUND).
(See Playground Equipment.)

BINS (METAL).
Mills Co.

BLEACHERIES.
(See Dyers, Bleachers and Finishers.)

BLEACHING KIERS.
Butterworth & Sons Co., H. W.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Textile Finishing Machry. Co.
Woolford Wood Tank Co., G.

BLEACHING MACHINERY.
(See Dyeing, Bleaching and Finishing Machinery.)

BLEACHING, FINISHING AND SIZING MATERIALS.
(See Finishing Materials.)

BLOWERS AND BLOWER SYSTEMS.
American Blower Co.
Buckeye Blower Co.
Carrier Eng. Corp.
General Electric Co.
Philadelphia Drying Mchry. Co.
Sturtevant Co., B. F.
Westinghouse Elec. & Mfg. Co.

BLOWPIPES (BRAZING, CUTTING, WELDING).
Oxweld Acetylene Co.

BOARDS—FIBRE.
Standard Fibre Co.

BOARDS—FORM.
Pearson, Jos. T.

BOBBINS.
Draper Corporation.
Fulton Supply Co.
Jordan Mfg. Co.
Lestershire Spool & Bobbin Co.
Parker Co., Walter L.
Shambow Shuttle Co.
Vermont Spool & Bobbin Co.
U S Bobbin & Shuttle Co.
Whitin Machine Works.

BOBBIN HEADS.
Jordan Mfg. Co.
U S Bobbin & Shuttle Co.
Vermont Spool & Bobbin Co.

BOBBIN STRIPPERS.
Crompton & Knowles Loom Works.
Terrell Machine Co.

BOILERS.
Casey-Hedges Co.
Cole Mfg. Co., R. D.
International Engineering Wks., Inc.
Lombard Iron Works & Supply Co.
Old Hickory Powder Plant.
Schofield's Sons Co., J. S.
Toomey, Frank.
Walsh & Weidner Boiler Co.

BOILER COMPOUNDS.
Dixon Crucible Co., Jos.

BOILER FEED WATER PURIFICATION.
American Water Softener Co.
Casey Hedges Co.
Scaife & Sons, Wm. B.

BOILER ROOM FITTINGS AND SUPPLIES.
American Blower Co.
Bristol Co.
Casey-Hedges Co.
Crane Co.
Dixon Crucible Co., Jos.
Fulton Supply Co.
Godfrey Conveyor Co.
International Engineering Co.
Jenkins Bros.
Lunkenheimer Co.
Old Hickory Powder Plant.
Sturtevant Co., B. F.

BOILER GRATES AND STOKERS.
(See Grates and Stokers.)

BOILER TUBES AND FITTINGS.
Ryerson & Son, Inc., Jos. T.

BOLTS AND NUTS.
Ryerson & Son, Inc., Jos. T.

BONDS AND STOCKS (TEXTILE MILL).
American Trust Co.

BOOKKEEPING MACHINES.
Monroe Calc. Mch. Co.

BOX STRAPPING AND TIE BUCKLES.
(See Banding Straps and Buckles.)

BOXES—MILL.
Allen Co.
Smith Mfg. Co.
Standard Fibre Co.

BOXES—PACKING.
(See Packing Boxes.)

BRAID.
(See Tapes.)

BRAZING.
(See Welding.)

BRICK (BUILDING & PAVING).
National Paving Brick Mfg. Asso.

BROKERS—COTTON.
(See Cotton Dealers & Brokers.)

BROKERS—STOCK.
(See Stocks and Bonds.)

BROOMS.
(See Brushes.)

BRUSHES—MILL.
Atlanta Brush Co.
Mason Brush Wks.
Southwestern Broom Mfg. Co.

BRUSHES—MOTOR AND GENERATOR (COMMUTATOR).
Dixon Crucible Co., Jos.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

BUCKETS AND PAILS—MILL.
Standard Fibre Co.

BUCKETS—ELEVATOR AND GRAB.
Link-Belt Company.

BUCKLES—COTTON TIE.
(See Box Strapping and Ties.)

BUILDING CONTRACTORS.
(See Contractors.)

BUILDINGS (PORTABLE STEEL).
Dowman, George.
Dowmau-Doxier Mfg. Co.

BUILDINGS (READY BUILT).
Minter Homes Co.

BUILDINGS (ALL STEEL).
Dowman, George.
Truscon Steel Co.
Maryland Metal Building Co.

BUILDING MATERIAL.
Anchor Post Iron Works.
Barrett Co., The.
Birmingham Slag Co.
Bogart & Carlough Co.
Callahan Co., T. J.
Detroit Graphite Co.
DeVilbiss Mfg. Co.
Dowman-Doxier Mfg. Co.
Dowman, George.
Dufur & Co.
Lupton's Sons Co., David.
Maryland Metal Building Co.
Minter Homes Co.
Murphy's Sons, C. P.
National Paving Brick Mfg. Asso.
Richardson Co.
Sanymetal Products Co.
Sonneborn Sons, Inc., L.
Southern Cypress Mfg. Asso..
Southern Wood Preserving Co.
Truscon Steel Co.
Variety Fire Door Co.
Wagner Mfg. Co.
Ware Paint Co.

BURR PICKERS.
Proctor & Schwartz, Inc.
Sargent's Sons, C. G.

BUSHINGS.
Southern Spindle & Flyer Co.

BUSINESS METHODS.
(See Consultants.)

CABINETS.
(See Lockers.)

CALCULATING MACHINES.
Monroe Calculating Mch. Co.

CALENDERS.
Butterworth & Sons Co., H. W.
Textile Finishing Mchry. Co.

CALENDER ROLLS.
(See Rolls—Calender.)

CALLING SYSTEM—INTER-TELEPHONE.
Carter Electric Co.

CAMPING EQUIPMENT, FURNITURE, STOVES, LIGHTS, ETC.
Smith Mfg. Co.

CANNING OUTFIT.
Home Canner Co.

CANS—ROVING.
Standard Fibre Co.

CANS (DRYING).
(See Drying Equipment.)

CARS AND TRUCKS—FIBRE.
(See Trucks.)

CARDS (BUSINESS OR CALLING—ENGRAVED).
Wiggins Co., John B.

CARBON BURNING APPARATUS.
Oxweld Acetylene Co.

CARBON RODS AND PASTE (WELDING).
Oxweld Acetylene Co.

CARBONIZING MACHINERY.
Chemical Textile Engineers, Inc.
Klauder-Weldon Dyeing Machine Co.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Sargent's Sons & Co., C. G.
Textile Finishing Mchry. Co.
Tolhurt Mch. Works.

CARDING MACHINERY AND SUPPLIES.
Davis & Furber Mch. Co.
Howard & Bullough.
Proctor & Schwartz, Inc.
Roy & Son, B. S.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Whitin Machine Works

CARD AND NAPPER CLOTHING.
Davis & Furber Mch. Co.
Howard Bros. Mfg. Co.

CARD FEEDS.
Davis & Furber Mch. Co.
Proctor & Schwartz, Inc.
Schofield Co., Wm.
Whitin Machine Co.

Hard Fibre Roving Trucks

STANDARD PLAIN FIBRE CAR

Specifications

Body—Heavy-gauge hard vulc. fibre.

Top Rim—Hard Maple—Metal Covered.

Centre Bands—Hard Maple.

Corner Castings—Heavy Malleable.

Bottom—No. 1 No. Carolina Hard Pine—matched and well fitted.

Wheels—4½" Diameter Thread Guard Lint Proof or Self Oiling Pattern.

Manufactured By

STANDARD FIBRE COMPANY

Somerville, Mass.

NO-WASTE

Seamless Roving Cans

—

HARDFIBRE

Plain or Steel Clad Boxes—Baskets and Barrels

—

Gill Boxes
Oval Cans

STANDARD STEEL CLAD CARS

Specifications

Body—Heavy-gauge hard vulc. fibre. Smooth inside with outside steel covered.

Rivets—Special Type Smooth Head.

Steel Angles—New type continuous angle construction.

Corners—Top Corners Malleable. Bottom Corners Embossed one-piece with vertical steel angle.

"ATLANTA" HARNESS

"Quality and Service That Satisfies"

ATLANTA HARNESS & REED MFG. CO.

ATLANTA, GA.
P. O. Box 1375

Telephone Main 0517

Steel Shelving

Lupton
INVESTMENT VALUE
PHILADELPHIA

Factory Equipment
From Warehouse Stocks

David Lupton's Sons Company
Amber St. and Allegheny Ave.
Philadelphia

TEXTILE MILL PAINTING

Done by experienced and skilled workmen who take pride in their work and assure you satisfaction and economy. Some of our recent jobs include the Arcade Cotton Mills, Carhartt Mill No. 1, Aragon Cotton Mills.

"I sell it— I apply it"

C. L. WILLIAMS

Rockhill, South Carolina

TEXTILE MILLS INDUSTRIAL PLANTS

PARK A. DALLIS

ARCHITECT AND ENGINEER

1604 CANDLER BLDG. ATLANTA, GEORGIA

BUYERS' INDEX—Continued.

CARD GRINDING MACHINERY.
Proctor & Schwartz, Inc.
Roy & Son, B. S.
Whitin Machine Works.

CARPET MACHINERY.
Butterworth, H. W. & Sons Co.
Crompton & Knowles Loom Works.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Schofield, Wm., Co.
Textile Finishing Mchry. Co.

CARRIER APRONS.
(See Aprons.)

CARRIER SYSTEM.
Euclid Crane & Hoist Co.
Curtis Pneumatic Machry. Co.
Wagner Mfg. Co.

CASES—WOODEN.
(See Packing Cases.)

CASTINGS.
Briggs, Schaffner Co.
Cole Mfg. Co., R. D.
Cresson-Morris Co.
Lombard Fdry. & Mch. Co.
Walsh & Weidner Boiler Co.

CAUSTIC SODA.
(See Bleaching Materials.)

CEMENT REINFORCEMENT.
Birmingham Slag Co.
Truscon Steel Co.

CEMENT AND BRICK COATING.
American Cement Paint Co.
Detroit Graphite Co.
Dixon Crucible Co., Jos.
Hockaday Co.
Sonneborn Sons, Inc., L.
Wadsworth, Howland & Co., Inc.
Ware Paint Co.

CENTRAL STATION (ELECTRIC).
Alabama Power Co.
Georgia Railway & Power Co.
Tennessee Electric Power Co.

CENTRIFUGALS.
Cresson-Morris Co.
Fletcher Works.
Goulds Mfg. Co.
Schaum & Uhlinger.
Tolhurst Mch. Wks.

CHAIN DRIVES.
(See Belting—Chain Link.)

CHAIN—BLOCK, BICYCLE, AUTO, ENGINE, AGRICULTURAL, ETC.
Fulton Supply Co.
Link Belt Co.
Morse Chain Co.
Renold, Inc., Hans.

CHAIRS AND STOOLS.
(See Furniture—Mill.)

CHECK STRAPS.
Bond Co., Chas.
Fulton Supply Co.
Hayes Loom Reed & Harness Co.
Jacobs Mfg. Co., E. H.

CHEMICALS.
(See Dyestuffs and Chemicals.)

CHLORINE GAS.
Electro Bleaching Gas Co.
Mathieson Alkali Works, Inc.

CLEANING MACHINERY (CLOTH AND YARN).
Rome Mch. & Fdry. Co.

CLEANING AND AERATING MACHINE FOR COTTON.
Murray Company, The.

CLOCKS—HANK, ETC.
(See Counters.)

CLOCKS (TIME).
Root Co.

CLOCKS—WATCHMAN.
Foxboro Co., Inc.
Root Co.

CLOSETS—WATER.
(See Toilets.)

CLOTH CUTTERS.
Firsching, J. A.
Foster Machine Co.
Wildman Mfg. Co.

CLOTH ROOM MACHINERY.
BButterworth, H. W., & Sons Co.
Davis & Furber Mch. Co.
Firsching, J. A.
Foster Machine Co.
Hopedale Mfg. Co.
Saco-Lowell Shops.
Textile Finishing Mchry. Co.
Williams Co., J. H.
Wildman Mfg. Co.

CLOTH SHRINKING MACHINERY.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Reliance Machine Works.
Tolhurst Mch. Wks.

CLOTH TESTERS.
Scott Co., Henry L.

CLOTH WINDERS.
(See Winders.)

CLUTCHES—FRICTION.
Allis-Chalmers Mfg. Co.
Carlyle-Johnson Machine Co.
Cresson-Morris Co.
Fulton Supply Co.
Link-Belt Company.

CLUTCH LININGS.
Carlyle-Johnson Mch. Co.

COAL AND ASH HANDLING MACHINERY.
Godfrey Conveyor Co.
Link-Belt Company.

COAL TAR DISINFECTANTS.
(See Disinfectants.)

COCKS.
(See Valves.)

COLOR PAILS.
(See Buckets—Mill.)

COMB APRONS.
(See Aprons.)

COMBER AND COMBER SUPPLIES.
Foster Machine Co.
U S Bobbin & Shuttle Co.
Whitin Machine Wks.

COMMISSION MERCHANTS & DEALERS.
(See Cotton Cloth Commission Merchants.)

COMPRESSORS—AIR, GAS, ETC.
Allis-Chalmers Mfg. Co.
Curtis Pneumatic Mchry. Co.
Fulton Supply Co.
General Electric Co.
Goulds Mfg. Co.

COMMUTATOR BRUSHES.
(See Brushes—Motor and Generator.)

CONCRETE REINFORCEMENT.
Birmingham Slag Co.

CONCRETE REINFORCING STEEL.
Ryerson & Son, Inc., Jos. T.

CONDENSERS.
Allis-Chalmers Mfg. Co.

CONDUITS.
(See Elec. Machinery & Supplies.)

CONE BELT TENSION DEVICE.
Bahan Textile Mch. Co.

CONES (KNITTING YARN).
Foster Mch. Co.
Southern Novelty Co.

CONE WINDING MACHINE.
(See Winding Machinery.)

CONNECTORS—FRANKEL SOLDERLESS.
Westinghouse Elec. & Mfg Co.

CONSULTANTS (BUSINESS METHODS).
Ernst & Ernst.

CONSULTING ENGINEERS.
(See Architects and Engineers)

CONTRACTORS AND ENGINEERS—BUILDING.
Dowman, George.
Dowman-Dozier Mfg. Co.
Sirrine & Co., J. E.
Truscon Steel Co.

CONTRACTORS—ELECTRICAL.
(See Electrical Engineers.)

CONTRACTORS (PAINTING).
Williams, C. L.

CONTRACTORS (ROOFING).
Dowman, Geo.
Dowman Dozier Mfg. Co.
Murphy's Sons, C. P.

CONTRACTORS (PAVING).
McCrary Co., J. B.

CONTRACTORS (WATERWORKS).
McCrary Co., J. B.

CONTRACTORS (SEWAGE).
McCrary Co., J. B.

CONTROLLING INSTRUMENTS—TEMPERATURE.
Bristol Co.
Foxboro Co., Inc.
General Electric Co.
Taylor Instrument Co.

CONVEYORS—BELT.
(See Belt Conveyors.)

CONVEYING MACHINERY.
American Supply Co.
Chisholm-Moore Mfg. Co.
Cresson-Morris Co.
Curtis Pneumatic Mchry. Co.
Dowman, George.
Euclid Crane & Hoist Co.
Fulton Supply Co.
Godfrey Conveyor Co.
Link-Belt Co.
Morse Chain Co.
Phila. Drying Machinery Co.
Proctor & Schwartz, Inc.
Renold, Hans.
Saco-Lowell Shops.
Schofield, Wm. Co.
Schofield, Wm. Co.
Wagner Mfg. Co.

CONVEYORS—PORTABLE.
Euclid Crane & Hoist Co.
Link-Belt Co.

COOLERS.
(See Humidifying Apparatus.)

COOLERS—WATER.
(See Water Coolers.)

COOLING AND CONDITIONING EQUIPMENT.
American Blower Co.
Buckeye Blower Co.
Sturtevant Co., B. F.

COOLING TOWERS.
(See Tanks and Towers.)

COPPER STAMPS AND STENCILS.
(See Stamps, Stencils, etc.)

CORDAGE MACHINERY.
Saco-Lowell Shops.
Textile Finishing Machinery Co., The.

CORPORATION FINANCE (TEXTILE).
American Trust Co.

CORRUGATED SHEET STEEL.
Ryerson & Co., Inc., Jos. T.

COST SYSTEMS.
Ernst & Ernst.

COTTAGES (READY BUILT).
Minter Homes Co.

COTTON CLEANING AND AERATING MACHINE.
Murray Company, The.

COTTON FANS.
(See Blowers.)

COTTON YARN AND CLOTH COMMISSION MERCHANTS AND DEALERS.
Aberfoyle Mfg. Co.
Boger & Crawford.
Callaway Mills.
Carver-Beaver Yarn Co., Inc.
Fawcett, Hughes.
Florsheim, H. A.
Hunter Mfg. & Comm. Co.
Jamieson, J. B.
Lane & Co., J. H.
Quissett Mill.
Tolar & Hart.
Weimar Bros.
Woodward, Baldwin & Co.

COTTON MERCHANTS AND BROKERS.
Beer & Co., H. & B.

COTTON MILL MACHINERY AND SUPPLIES.
American Blower Co.
Atlanta Harness & Reed Mfg. Co.
Auto Creel Corp.
Bahan Textile Mch. Co.
Barber-Colman Co.
Butterworth & Sons, H. W.
Crompton & Knowles Loom Works.
Davis & Furber Mch. Co.
Draper Corporation.
Dowman, George.
Dryer Corp. of America.
Eclipse Textile Devices, Inc.
Firsching Co., J. A.
Fletcher Works.
Foster Machine Co.
Foxboro Co., Inc.
Fulton Supply Co.
Greist Mfg. Co.
Hayes Loom Reed & Harness Co.
Hopedale Mfg. Co.
Howard Bros. Mfg. Co.
Hunt Machine Co., Rodney.
Hyatt Roller Bearing Co.
Jacobs Mfg. Co., E. H.
Lestershire Spool Mfg. Co.
Lowell Crayon Co.
Mill Devices Co.
Mossberg Pressed Steel Corp.
Parker Co., Walter L.
Phila. Drying Mchry. Co.
Proctor & Schwartz, Inc.
Reutlinger, J. J.
Root Co.
Roy & Son, B. S.
Sargent's Sons Corp., C. G.
Saco-Lowell Shops.
Schaum & Uhlinger.
Schofield Co., Wm.
Shambow Shuttle Co.
Stafford Co.
Steel Heddle Mfg. Co.
Sturtevant Co., B. F.
Suter, Alfred.
Terrell Machine Co.
Textile Finishing Machinery Co.
Textile Rubber Co.
Toledo Scale Co.
Tolhurst Mch Wks.
U S Bobbin & Shuttle Co.
Vermont Spool & Bobbin Co.
Washurn & Sons, L. R.
Williams Co., J. H.
Whitin Machine Works.
Whitinsville Spinning Ring Co.

COTTON TAPE LOOM.
Fletcher Works.
Foster Mch. Co.
Schaum & Uhlinger.

COTTON YARN MILLS.
(See Yarn Manufacturers.)

COUNTERS—REVOLUTION, HANK, PICK, ETC.
Bristol Co.
Foxboro Co.
Root Co.

COUNTERS—RESTAURANT.
(See Restaurant Equipment.)

COUPLING—SHAFT.
Cresson-Morris Co.
Dodge Mfg. Co.

COVERING—ROLLER.
Bond Co., Chas.

CRANES.
(See Hoists.)

CRAYONS.
Eclipse Crayon Co.
Lowell Crayon Co.

CREELS.
Auto Creel Corp.
Suter, Alfred.

CREOSOTED FLOORING, BLOCKS, POSTS, SHINGLES, ETC.
Southern Wood Preserving Co.

CUTS FOR PRINTING.
Jacobs & Co.

CUTTERS—CLOTH.
(See Cloth Cutters.)

CUTTERS—THREAD.
(See Thread Cutters.)

DECARBONIZING APPARATUS
Oxweld Acetylene Co.

CUTTING APPARATUS (OXY-ACETYLENE & OXY HYDROGEN).
Oxweld Acetylene Co.
Standard Gas Products Co.

DEHUMIDIFIERS.
American Moistening Co.
Sturtevant Co., B. F.

DELIVERY CASES.
(See Boxes—Packing.)

DESKS—FACTORY.
Allen Co.
Lupton's Sons Co., David.

DEXTRINES.
(See Dyestuffs and Chemicals.)

DIAL SCALES.
(See Scales.)

DIES—STEEL.
(See Stamps, Stencils, Etc.)

DIE STOCKS.
(See Pipe Threaders.)

DISINFECTANTS.
Barrett Co., The.

DOBBY CHAINS.
Crompton & Knowles Loom Wks.
Whitin Machine Works.

DOBBY CARDS.
Jacobs & Co., E. H.

DOFFING BOXES—MILL.
(See Boxes—Mill.)

DOFFER FILLETS.
(See Fillets.)

DOFFING CARS.
(See Cars.)

DOORS—STEEL.
Dowman, George.
Dowman-Dozier Mfg. Co.
Mills Co.
Lupton's Sons Co., David.
Variety Fire Door Co.

DRAWINGS AND ARTWORK.
Jacobs & Co.

DRAWING FRAMES.
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

DRESSING ROOMS (METAL PARTITIONS).
Mills Co.

DRILLS—ELECTRIC.
(See Electric Machinery.)

DRINKING FOUNTAINS.
(See Fountains—Drinking.)

DROP WIRES.
Draper Corp.
Greist Mfg. Co.
Mossberg Pressed Steel Corp.
Steel Heddle Mfg. Co.
Williams Co., J. H.

DRY CLEANING MACHINERY.
Rome Machine & Fdry. Co.

DRYING APPARATUS.
American Blower Co.
Buckeye Blower Co.
Dryer Corp. of America.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Sturtevant Co., B. F.

DRYING FORMS—HOSIERY.
Pearson, Jos. T.

DRYING MACHINERY AND EQUIPMENT.
American Blower Co.
American Laundry Mchry. Co.
Butterworth, H. W., & Sons Co.
Dryer Corp. of America.
Philadelphia Drying Mchry. Co.
Proctor & Schwartz, Inc.
Sargent's Sons Corp., C. G.
Sturtevant Co., B. F.
Textile Finishing Machinery Co., The.
Tolhurst Machine Works.

DUST COLLECTORS.
(See Blowers and Blowing Systems.)

DUSTING MACHINERY.
Davis & Furber Mch. Co.
Proctor & Schwartz, Inc.
Schofield Co., Wm.

DYERS, BLEACHERS AND FINISHERS.
Aberfoyle Mfg. Co.
American Yarn & Processing Co.
Boger & Crawford.
Dixie Mercerizing Co.
Franklin Process Co.

DYEING, BLEACHING, FINISHING AND PRINTING MACHINERY AND EQUIPMENT.
American Laundry Mchry. Co.
Butterworth & Sons Co., H. W.
Chemical Textile Engineers, Inc.
Cole Mfg. Co., R. D.
Dryer Corp. of America.
Electro Bleaching Gas Co.
Firsching, J. A.
Fletcher Works.
Franklin Process Co.
Hightower Box & Tank Co.
Hunt Machine Co., Rodney.
Klauder-Weldon Dyeing Mch. Co.
Phila. Drying Machinery Co.
Proctor & Schwartz, Inc.
Reliance Machine Works.
Rome Machine & Fdry. Co.
Schaum & Uhlinger.
Textile Finishing Machinery Co., The
Tolhurst Machine Works.
Woolford Wood Tank Co., G.

DYEING MACHINES (PACKAGE AND SPOOL).
Franklin Process Co.

DYE BAGS OR NETS.
Smith Mfg. Co.

DYE STICKS.
Phila. Drying Machinery Co.

DYE VATS AND TUBS.
(See Tanks or Bleaching Kiers.)

AMERICAN TRUST CO.

BOND DEPARTMENT

Specializes in Textile Corporation Finance, Negotiates purchase and sale of cotton Mills. Offers conservative investments in Textile preferred stocks to yield from 6½% to 7½%.

BOND DEPARTMENT

American Trust Co.

FRANK B. GREEN, Manager.
CHARLOTTE, N. C.

Elevated Tanks
Boilers, Engines
Castings
Hosiery Dye Machines

R. D. Cole Mfg. Co.
Newnan, Ga.

Shafts, Pulleys, Hangers, Belting Packing, Lacing

BOILERS

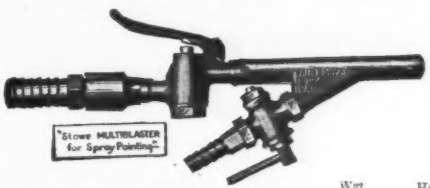
For Mills and Public Works. Low Prices

Tanks, Stacks, Smoke Flues, Boiler Tubes, Pipe, Valves, Fittings, Kerosene and Gasoline Engines, Wood Saws, Pumps, Heaters, Injectors, Engine Supplies, and Repairs for Mills, Hotels, Public Works.

Iron and Brass Castings Cast Every Day.

LOMBARD Foundry, Machine, Boiler Works, and Supply Store
AUGUSTA, GEORGIA

STOWE MULTIBLASTER
FOR THE MECHANICAL APPLICATION OF PAINT



Any outfit shipped by parcels post or express for 10 days' trial; ready for instant attachment to your airlines.

	Price	Wgt. Lbs.	Hose Suction In.	Pressure Lbs.
Standard Size Sand Blast	$30.00	8	1	50-90
Medium Size Sand Blast	18.00	6	¾	60-70
Bench Blast	15.00	3	½	40-50
Paint Spray	12.00	2	½	40-50

Made by
GEO. M. STOWE, JR. Forest and West Aves. **BUFFALO, N. Y.**

COTTON MILL REPAIRS

SEND SAMPLES OF PARTS WANTED AND GET OUR PRICES. YOU DON'T HAVE TO BUY.

WE WILL SAVE YOU TIME

AND WON'T EXPECT YOUR ORDER IF WE CAN'T

SAVE YOU SOME MONEY TOO

Briggs-Shaffner Company

WINSTON-SALEM, N. C.

MACHINE WORK FOUNDRY WORK

PUMPS

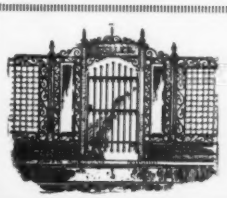
INDUSTRIAL — AGRICULTURAL — MUNICIPAL — RESIDENTIAL

A type for every service.
Bulletins on request.

The Goulds Manufacturing Company
SENECA FALLS, N. Y.

GOULDS

ADVERTISING is an economy and cuts the cost of selling, making lower prices on better goods possible without sacrifice of the sellers' profits.



WIRE RAILINGS
WINDOW GUARDS
WIRE CLOTH
Established 1835.
DUFUR & CO.
509 West Franklin St., Baltimore, Md.

WATER

WE-FU-GO AND SCAIFE
PURIFICATION SYSTEMS
SOFTENING & FILTRATION
FOR BOILER FEED AND ALL INDUSTRIAL USES
WM. B. SCAIFE & SONS CO. PITTSBURGH, PA.

BUYERS' INDEX—Continued.

DYESTUFFS AND CHEMICALS.
Arnold, Hoffman & Co.
Barrett Co.
Borne, Scrymser Co.
Bosson & Lane.
Ciba Co., Inc.
Electro Bleaching Gas Co.
Ford Co., J. B.
Grasselli Chemical Co.
India Alkal. Works.
Kali Mfg. Co
Lennig & Co, Chas.
Mathieson Alkali Works, Inc.
Metz & Co., H. A.
National Aniline & Chemical Co.
Quaker City Chemical Co.
Roessler & Hasslacher Chemical Co.
New Brunswick Chemical Co.
Penick & Ford, Ltd.
Rohm & Hass Co.
Sandoz Chemical Co.
Sonneborn Sons, Inc., L.
Staley Mfg. Co., A. E.
Stein, Hall & Co.
Surpass Chemical Co.
United Chemical Products Corp.
Wolf & Co., Jacques.

ELECTRIC CONDUIT AND FITTINGS.
(See Electrical Machinery and Supplies.)

ELECTRIC DYNAMOS AND MOTORS.
(See Motors and Generators.)

ELECTRIC FANS.
(See Fans—Electric.)

ELECTRIC LAMPS.
(See Lamps.)

ELECTRIC LAMP GUARDS.
Ivanhoe Regent Works.
Perry-Mann Electric Co.
Southern Elec. Supply Co.

ELECTRICAL ENGINEERS AND CONTRACTORS.
Curtis Co., The.
Huntington & Guerry, Inc.
McCrary Co., J. B.
Panton, Harrison D.
Perry-Mann Electric Co.
Standard Electric Co.

ELECTRIC LIGHTING ENGINEERS.
(See Illuminating Engineers.)

ELECTRICAL MACHINERY, INSTRUMENTS AND SUPPLIES.
Allis-Chalmers Mfg. Co.
American Blower Co.
Bristol Co.
Carter Electric Co.
Cooper Hewitt Electric Co.
Curtis Co., The.
Cutler Works, George.
Euclid Crane & Hoist Co.
Fulton Supply Co.
General Electric Co.
Ivanhoe-Regent Works.
Perry-Mann Electric Co.
Seawell, Luke.
Southern Elec. Supply Co.
Standard Electric Co.
Sturtevant Co., B. F.
Walsh & Weidner Boiler Co.
Westinghouse Elec. & Mfg. Co.

ELECTRIC POWER.
(See Power.)

ELECTRIC PRESSES (HIGH-PRESSURE).
Rex Eng'g Corp.

ELECTRIC TRACTORS AND TRUCKS.
(See Tractors and Trucks—Electric.)

ELECTROTYPES.
Jacobs & Co.

ELEVATORS—PORTABLE.
Collins, J. D.
Euclid Crane & Hoist Co.

ELEVATORS.
Link-Belt Company.

ENAMELED IRON AND GLASS FOR TEXTILE MACHRY.
Mitchell Bissell Co.

ENAMEL—MILL WHITE.
(See Paint.)

ENGINEERS—MILL.
(See Architects.)

ENGINES—OIL, GAS AND GASOLINE.
Allis-Chalmers Mfg. Co.
Fulton Supply Co.

ENGINES (STEAM).
Allis-Chalmers Mfg. Co.
American Blower Co.
Cole Mfg. Co., R. D.
Fulton Supply Co.
Lombard Iron Works & Supply Co.
Schofield's Sons Co., J. S.
Toomey, Frank.

ENGINE ROOM APPLIANCES AND SUPPLIES.
American Blower Co.
Casey-Hedges Co.
Crane Co.
Fulton Supply Co.
Jenkins Bros.
Lunkenheimer Co.
Westinghouse Elec. & Mfg. Co.

ENGINEERS (CONSULTANT AND EFFICIENCY).
Ernst & Ernst.

ENGINEERS, CONTRACTORS & BUILDERS (SANITARY & PAVING).
McCrary Co., J. B.

ENGINEERS (TEXTILE AND MECHANICAL CONSULTING).
Panton, Harrison D.

ENGINEERS (MECHANICAL).
Bird-Potts & Co., Inc.

ENGRAVING AND CUTS.
Jacobs & Co.

ETCHING—(PRINTING).
Jacobs & Co.

EXHAUSTERS.
(See Blowers.)

EXPORTERS—COTTON.
(See Brokers.)

EXTRACTORS—HYDRO.
American Laundry Mchry. Co.
Fletcher Works.
Schaum & Uhlinger.
Tolhurst Machine Works.

FACTORY DESKS.
Lupton's Sons Co., David.

FACTORY AND INDUSTRIAL SITES.
(See Industrial Sites.)

FACTORY MANAGEMENT SYSTEMS.
Ernst & Ernst.

FANS—ELECTRIC.
American Blower Co.
Buckeye Blower Co.
Carter Electric Co.
General Electric Co.
Perry-Mann Electric Co.
Southern Electric Supply Co.
Westinghouse Elec. & Mfg. Co.

FANS—CONVEYING, POWER AND EXHAUST.
(See Blowers and Blowing Systems.)

FASTENERS—BELT.
(See Belt Fasteners.)

FEED WATER PURIFIERS.
(See Boiler Feed Water Purification.)

FEEDERS.
(See Automatic Feeders.)

FELTING MACHINERY.
Proctor & Schwartz, Inc.

FENCE—STEEL AND IRON.
Anchor Post Iron Works.
Cyclone Fence Co.
Dowman, George.

FENCE POSTS—CREOSOTED PINE.
Southern Wood Preserving Co.

FIBRE PRODUCTS.
Standard Fibre Co.

FILLETS (CYLINDER, DOFFER, BURNISHER AND STRIPPER).
Howard Bros. Mfg. Co.

FILLING—CAP AND WARP.
U S Bobbin & Shuttle Co.

FILTERS—WATER.
American Water Softener Co.
Scaife & Sons Co., Wm. B.

FILTERS (ALUM).
Lennig & Co., Chas.

FILTER CLOTHS.
Smith Mfg. Co.

FINISHING.
(See Dyers, Bleachers and Finishers.)

FINISHING, BLEACHING AND SIZING MATERIALS.
Arnold, Hoffman & Co.
Barrett Co.
Borne, Scrymser Co.
Bosson & Lane.
Ciba Co., Inc.
Corn Products Refining Co.
Electro Bleaching Gas Co.
Ford Co., J. B.
India Alkali Works.
Kali Mfg. Co.
Keever Starch Co.
Lennig & Co., Chas.
Mathieson Alkali Works, Inc.
Metz & Co., H. A.
National Aniline & Chemical Co.
Roessler & Hasslacher Co.
New Brunswick Chemical Co.
Penick & Ford, Ltd.
Quaker City Chemical Co.
Rohm & Hass Co.
Sandoz Chemical Co.
Sonneborn Sons, Inc., L.
Staley Mfg. Co., A. E.
Stein, Hall & Co.
United Chemical Products Corp.
Warren Soap Mfg. Co.
Wolf & Co., Jacques.

FIRE DOORS AND HARDWARE.
Bogert & Carlough.
Dowman-Dozier Mfg. Co.
Dowman, George.
Luptons Sons Co., David.
Sanymetal Products Co.
Truscon Steel Co.
Variety Fire Door Co.

FIRE HOSE.
(See Hose—Fire.)

FIRE PROTECTING PAINT.
(See Paint.)

FLAT STEEL HEDDLES.
Steel Heddle Mfg. Co.

FLAX SPINNING.
U S Bobbin & Shuttle Co.

FLEXIBLE COUPLINGS.
Allis-Chalmers Mfg. Co.
Cresson-Morris Co.

FLOOD LIGHTS—ELECTRIC.
Cooper Hewitt Electric Co.
Ivanhoe Regent Works.
General Electric Co.
Perry-Mann Electric Co.
Southern Electric Supply Co.
Westinghouse Elec. & Mfg. Co.

FLOORS (TAR CONCRETE).
Murphy's Sons, C. P.

FLOORING LUMBER.
Southern Cypress Mfg. Asso.
Southern Wood Preserving Co.

FLOORING—WOOD BLOCKS.
Southern Wood Preserving Co

FLOOR SCRUBBING MACHINE
American Scrubbing Equipment Co.

FLOOR SCRUBBING POWDERS.
(See Scrubbing Powders.)

FLOOR SWEEPS.
(See Brushes.)

FLUTED ROLLS.
Howard & Bullough.
Proctor & Schwartz, Inc.
Saco-Lowell Shops.
Schofield & Sons, J. S.
Southern Spindle & Flyer Co
Whitin Machine Works.

FLUX (WELDING).
Oxweld Acetylene Co.

FLYERS.
Howard & Bullough.
Saco-Lowell Shops.
Southern Spindle & Flyer Co
Whitin Machine Works.

FOUNDERS.
Briggs-Schaffner Co.
Cole Mfg. Co., R. D.
Cresson-Morris Co.
Lombard Fdy. & Mch. Wks.

FOUNTAINS—DRINKING.
Crane Co.
Manufacturing Equip. & Eng' Co.
Rundle-Spence Mfg. Co.

FRICTION CLUTCHES.
(See Clutches—Friction.)

FUEL ECONOMIZERS.
Sturtevant Co., B. F.

FURNITURE (FOLDING—CAMP).
Smith Mfg. Co.

FURNITURE—MILL.
Manufacturing Equip. & Eng' Co.
Mills Co.
Sanymetal Products Co.
Smith Mfg. Co.

FUSES—ELECTRIC.
Carter Electric Co.
Fulton Supply Co.
Perry-Mann Electric Co.
Seawell, Luke.
Southern Electric Supply Co.

GARAGES (PORTABLE—METAL).
Dowman, George.

GARNETT MACHINES.
Proctor & Schwartz, Inc.

GAS ENGINES.
(See Engines—Gas.)

GASOLINE LIGHTING SYSTEMS, LANTERNS, ETC.
Smith Mfg. Co.

GASOLINE CAMP STOVES.
Smith Mfg. Co.

GAUGES—STEAM PRESSURE, ETC.
Bristol Co.
Fulton Supply Co.
Foxboro Co., Inc.
Taylor Instrument Co.

GAUGE—OIL.
Fulton Supply Co.
Lunkenheimer Co.

GAUGES (LIQUID LEVEL).
Foxboro Co., Inc., The.
Lunkenheimer Co.
Taylor Inst. Co.

GAUGES—WATER.
Fulton Supply Co.
Lunkenheimer Co.

GEARS—SILENT.
Dodge Mfg. Co.
Fulton Supply Co.
General Electric Co.
Link-Belt Company.
Morse Chain Co.
Renold, Hans.

GEAR CUTTING AND CUTTERS.
Cresson-Morris Co.

GEAR PULLERS.
General Electric Co.

GENERATORS—ELECTRIC.
(See Motors and Generators.)

GLOVES (ASBESTOS).
Oxweld Acetylene Co.

GOGGLES (WELDING).
Oxweld Acetyene Co.

GLASSWARE AND DISHES
(See Dishes.)

GOVERNORS—PUMP.
General Electric Co.

GRAPHIC CHARTS.
Ernst & Ernst.

GRAPHITE.
Detroit Graphite Co.
Dixon Crucible Co., Jos.

GRATES—BOILER.
Casey-Hedges Co.
Cole Mfg. Co., R. D.
International Eng. Works.
Lombard Fdry. & Mch. Co.
Walsh & Weidner Boiler Co.

GRATES—MECHANICAL.
(See Stokers.)

GREASE.
(See Lubricants.)

GRAVEL AND SLAG ROOFING.
Murphy's Sons, C. P.

GREASE CUPS.
(See Lubricators.)

GRINDER—CARD, CYLINDER ROLL, NAPPER AND GAR NET.
(See Card Grinding Machinery.)

GAUGES (WELDING).
Oxweld Acetylene Co.

GUARDS—ELECTRIC LAMP.
(See Electric Lamp Guards.)

GUARDS—MACHINE, SKY LIGHT, WINDOW, ETC.
Anchor Post Iron Works
Dowman, George.

GUIDES—THREAD.
Mitchell-Bissell Co.
Palmer Co., I. E.

GUMS.
(See Finishing and Sizing Materials.)

HALFTONES—PRINTING.
Jacobs & Co.

HANGERS.
(See Shafting and Hangers.)

HANK CLOCKS.
(See Counters.)

HARDWARE—BUILDING.
Dowman, George.
Dowman-Dozier Mfg. Co.
Sanymetal Products Co.
Wagner Mfg. Co.

HARNESS—LOOM.
(See Loom Harness.)

HEADS—BOBBIN AND SPOOL
Lestershire Spool & Bobbin Co.
Parker Co., Water L.
U S Bobbin & Shuttle Co.

HEATING AND VENTILATING APPARATUS.
(See Ventilating Apparatus.)

HEDDLES.
Crompton & Knowles Loom Works.
Draper Corporation.
Howard Bros. Mfg. Co.
Reutlinger, J. J.
Steel Heddle Mfg. Co.
Williams Co., J. H

HEDDLE FRAMES
Crompton & Knowles Loom Works.
Steel Heddle Mfg. Co.
Williams Co., J. H.

HOISTS.
Chisholm Moore Mfg. Co.
Curtis Pneumatic Mchry. Co.
Euclid Crane & Hoist Co.
Fulton Supply Co.
Link-Belt Company.
Morse Chain Co.

HOPPER FEEDERS.
(See Automatic Feeders.)

HORNS AND MUSICAL INSTRUMENTS.
Conn, Ltd., C. G.

HOSE (WELDING).
Oxweld Acetylene Co

HOSIERY DYEING MACHINERY.
Cole Mfg. Co., R. D.
Franklin Process Co.
Philadelphia Drying Mchry. Co.

HOSIERY FORMS.
(See Drying Forms.)

HOSIERY YARNS.
(See Yarn Manufacturers.)

HOTELS.
Hotel Tuller.

HOUSES AND MILL COTTAGES (READY BUILT).
Minter Homes Co.

HUMIDIFYING APPARATUS.
American Blower Co.
Carrier Eng. Corp.
Parks-Cramer Co.
Sturtevant Co., B. F.

HUMIDIFYING INDICATING INSTRUMENTS.
Bristol Co.
Foxboro Co., Inc., The.
Taylor Instrument Co.

HUMIDITY RECORDERS.
Foxboro Co., Inc., The.

HYDGRODEIKS.
Taylor Instrument Co.

HYGROMETERS.
Foxboro Co.
Taylor Instrument Co.

HYDRAULIC TURBINES.
(See Turbines—Hydraulic.)

HYDRO EXTRACTORS.
(See Extractors.)

ILLUMINATING ENGINEERS.
Cooper Hewitt Electric Co
Curtis Co., The.
Huntington & Guerry, Inc.
Panton, Harrison D.
Ivanhoe-Regent Works.

INDICATING AND RECORDING INSTRUMENTS AND THERMOMETERS.
Bristol Co.
Foxboro Co., Inc.
General Electric Co.
Westinghouse Elec. & Mfg. Co.
Root Co.
Taylor Instrument Co.

INDIGO.
(See Dyestuffs and Chemicals.)

INDUSTRIAL SITES.
Alabama Power Co.
Georgia Ry. & Power Co.
Old Hickory Powder Plant.
Seaboard Air Line Ry.
Southern Ry.
Tennessee Electric Power Co.

INK—STENCIL AND MARKING.
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.

INSURANCE.
Prudential Insurance Co.
Travelers Insurance Co.

IRON AND STEEL.
Ryerson & Son., Inc., Jos. T.

IRON WORK—ORNAMENTAL.
Anchor Post Iron Works.
Cyclone Fence Co.
Dowman, George.
Dufur & Co.
Lombard Iron Works & Supply Co.

JACK SPOOLS.
(See Spools.)

JACQUARDS.
Crompton & Knowles Loom Works.

JACQUARD HEDDLES.
Steel Heddle Mfg. Co.

JOINT COMPOUND.
Dixon Crucible Co., Jos.

JUTE BAGGING MACHINE.
Proctor & Schwartz, Inc.

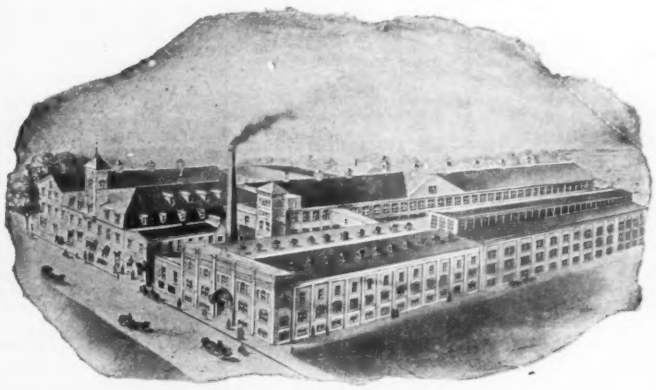
KETTLES—SIZE.
(See Size Kettles.)

KETTLES—SODA.
Lombard Iron Works & Supply Co.

KIERS.
(See Bleaching Kiers.)

Built On A Solid Foundation

The EMMONS Loom Harness Company is built on a solid foundation of QUALITY and SERVICE—and every product leaving our plant reflects on the ability of each individual, we cannot afford to sell an inferior product to our customers. Therefore in purchasing



COTTON HARNESS, MAIL HARNESS, SELVEDGE HARNESS, REEDS, SLASHER AND STRIKING COMBS, WARPER AND LIECE REEDS, BEAMER AND DRESSER HECKS, MENDING EYES, JACQUARD HEDDLES, ETC.

from us you are assured of the very best that our experts are capable of producing. May we fill your needs?

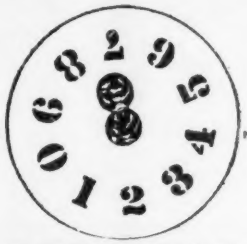
Southern Representative
GEORGE F. BAHAN

EMMONS LOOM HARNESS CO., LAWRENCE, MASS.

SOLE AGENTS FOR WARDWELL PICKERS

The Largest Manufacturers of Loom Harness and Reeds in America

EMMONS LOOM HARNESS AND REEDS



STENCILS

for any purpose. We make them promptly and properly.

DIXIE SEAL & STAMP CO. ATLANTA

Perhaps we can give you the information

The superintendent of a mill wanted a lot of special corrugated paper boxes. We told him where he could get them.

Another superintendent wanted information as to where he might obtain some 2,000 horsepower of boilers. We gave him the names of several possible sources of supply.

So it goes. This service is free to readers of COTTON. We are always glad to be of assistance in filling your wants. Our files contain the names of manufacturers and dealers in every article or supply you can possibly want.

Let us help you find the things you need. Look first through the advertising pages of COTTON, then if what you want is not advertised write us.

We promise to give you immediate service. We know that we can be of assistance to you.

Cotton, Grant Bldg., Atlanta

UCPC

Direct Sulphur Chrome } **Dyes** { **Acid Vat Basic**

Special Shades Matched VELVETEEN

The Best Boil-off and Finish

Softeners *Oils* *Finishes*

UNITED CHEMICAL PRODUCTS CORPORATION

Importers, Exporters and Manufacturers

York and Colgate Sts. Jersey City, N. J.

Southern Office 307 Commercial National Bank Building Charlotte, N. C.

Pawtucket, R. I.
Norwalk, Conn.
Chicago, Ill.

BUYERS' INDEX—Continued.

KNIT GOODS.
(See Cotton Cloth Commission Merchants and Dealers.)

KNIT GOODS WASHERS.
(See Washers—Cloth.)

KNITTING MACHINERY AND SUPPLIES.
Brinton Co., H.
General Machine Works.
Granite State Needle Co.
Hemphill Mfg. Co.
Scott & Williams.
Torrington Co.
Trump Bros. Machine Co.
Wildman Mfg. Co.

KNITTING NEEDLES.
Granite State Needle Co.
Torrington Co.

KNOTTERS.
Barber-Colman Co.
Mill Devices Co.

LABORATORY INSTRUMENTS.
Bristol Co.
Scott & Co., Henry L.
Foxboro Co., Inc.
Root Co.
Taylor Instrument Co.

LACING—BELT.
(See Belt Lacing.)

LAMPS—INCANDESCENT AND ARC.
Carter Electric Co.
Cooper Hewitt Electric Co.
Curtis Co., The.
Cutter Works, George.
General Electric Co.
Ivanhoe-Regent Works of G. E. Co.
Perry-Mann Electric Co.
Seawell, Luke.
Southern Electric Supply Co.
Westinghouse Elec. & Mfg. Co.

LAMP GUARDS—KEY LOCKING
(See Electric Lamp Guards.)

LAMP REFLECTORS.
Carter Electric Co.
Cooper Hewitt Electric Co.
Curtis Co., The.
Ivanhoe-Regent Works of G. E. Co.
Perry-Mann Electric Co.
Southern Electric Supply Co.
Westinghouse Elec. & Mfg. Co.

LANDSCAPE ARCHITECTS.
(See Village Architects.)

LAPPERS.
Saco-Lowell Shops.
Whitin Machine Works.

LATHES.
Fulton Supply Co.

LAUNDRY BAGS, BASKETS & NETS.
Smith Mfg. Co.

LAUNDRY MACHINERY.
American Laundry Mchry. Co.
Fletcher Works.
Hunt Machine Co., Rodney.
Rome Machine & Fdry. Co.
Schaum & Uhlinger.
Tolhurst Machine Works.

LAVATORIES.
Crane Co.
Manufacturing Equip. & Eng'g Co.
Vogel Co., Jos. A.

LEAD BURNING APPARATUS (OXY-ACETYLENE AND OXY CITY GAS).
Oxweld Acetylene Co.

LEATHER BELTING.
(See Belting.)

LEATHER SPECIALTIES.
American Supply Co.
Bond Co., Chas.
Graton & Knight Mfg. Co.
Jacobs Mfg. Co., E. H.
Williams & Sons, I. B.

LIGHTS—FLOOD.
(See Flood Lights.)

LIGHTING ENGINEERS AND CONTRACTORS.
(See Illuminating Engineers.)

LINEN YARNS.
(See Yarns—Linen.)

LINK BELTING.
(See Belting—Link.)

LINTERS.
(See Waste Dealers.)

LIQUID CHLORINE
(See Chlorine.)

LOADERS—WAGON AND TRUCK.
Link-Belt Company.

LOCKERS AND CABINETS
Allen Co.
Bowman, George.
Lupton's Sons Co., David.
Mills Co.
Manufacturing Equip. & Eng'g Co.
Sanymetal Products Co.

LOGWOOD EXTRACT.
(See Dyestuffs and Chemicals.)

LOOMS.
Crompton & Knowles Loom Works.
Draper Corporation.
Fletcher Works.
Hopedale Mfg. Co.
Saco-Lowell Shops.
Schaum & Uhlinger.
Stafford Co.

LOOM ATTACHMENTS—AUTOMATIC
Draper Corporation.
Hopedale Mfg. Co.

LOOM HARNESS.
American Supply Co.
Atlanta Harness & Reed Mfg. Co.
Crompton & Knowles Loom Wks.
Emmons Loom Harness Co.
Greist Mfg. Co.
Garland Mfg. Co.
Hayes Loom Reed & Harness Co.
Steel Heddle Mfg. Co.

LOOPS (END).
Reutlinger Co., J. J.

LOOP PICKERS.
Jacobs Mfg. Co., E. H.

LUBRICANTS.
Dixon Crucible Co., Jos.
N. Y. & N. J. Lubricant Co.
Texas Co.

LUBRICATORS.
Lunkenheimer Co.
N. Y. & N. J. Lubricant Co.

LUG STRAPS.
(See Straps—Lug.)

LUG STICKS.
Allen Co.

LUMBER.
Southern Cypress Mfg. Asso.
Southern Wood Preserving Co.

LUNCH ROOM EQUIPMENT.
(See Restaurant.)

MACHINE GUARDS.
(See Guards—Machine.)

MACHINE TOOLS.
(See Tools.)

MACHINISTS.
Bird-Potts Co., Inc.
Briggs-Schaffner Co.
Cole Mfg. Co., R. D.
Cresson-Morris Co.
Lombard Fdry. & Mch. Wks.

MAILS (INSERTED STEEL).
Reutlinger, J. J.

MANIFOLDS.
Oxweld Acetylene Co.

MARKING POTS, STENCILS, INKS, ETC.
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.

MERCERIZED YARNS.
(See Yarn Manufacturers.)

MERCERIZERS.
Aberfoyle Mfg. Co.
Amer. Yarn & Processing Co.
Boger & Crawford
Dixie Mercerizing Co.

MERCERIZED YARN.
Aberfoyle Mfg. Co.
American Yarn & Pro. Co.
Boger & Crawford Co.
Dixie Mercerizing Co.
Hunter Mfg. & Comm. Co.

MERCERIZING MACHINERY.
Butterworth, H. W. & Sons Co.
Textile Finishing Machinery Co.

METAL CEILINGS, ETC.
Dowman, George.
Dowman-Dozier Mfg. Co.
Lupton's Sons Co., David.
Truscon Steel Co.

METAL SIDING.
Dowman, George.
Dowman-Dozier Mfg. Co.

METALS—PERFORATED.
(See Screens and Sieves.)

METAL WORKS (SHEET).
Dowman-Dozier Mfg. Co.

METERS—FLOW, AIR, GAS, ELECTRIC, STEAM, ETC.
Allis-Chalmers Mfg. Co.
Carter Electric Co.
Foxboro Co., Inc.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

METERS—COUNTING.
(See Counters.)

MILL BASKETS AND BOXES.
(See Boxes—Mill.)

MILL ENGINEER.
(See Architects and Engineers.)

MILL VILLAGES.
(See Villages.)

MILL SUPPLIES—MISCELLANEOUS.
(See Supplies—Mill.)

MILL WHITE PAINT.
(See Paint.)

MOPS.
Atlanta Brush Co.
Southwestern Broom Mfg. Co.

MOTION PICTURES.
(See Films.)

MOTORS AND GENERATORS—ELECTRIC.
Allis-Chalmers Mfg. Co.
American Blower Co.
Carter Electric Co.
Curtis Co., The.
Fulton Supply Co.
General Electric Co.
Perry-Mann Electric Co.
Southern Electric Supply Co.
Standard Electric Co.
Sturtevant Co., B. F.
Westinghouse Elec. & Mfg. Co.

MOVING PICTURE MCH. AND SUPPLIES.
(See Theatre Equipment.)

MUSICAL INSTRUMENTS.
Conn, Ltd., C. G.

NAPPER CLOTHING.
Davis & Furber Mch. Co.
Howard Bros. Mch. Co.

NAPPER ROLL GRINDING MACHINES.
(See Card Grinders.)

NAPPING MACHINERY.
Davis & Furber Mch. Co.
Saco-Lowell Shops.

NEEDLES—KNITTING.
Granite State Needle Co.
Torrington Co.

OFFICE EQUIPMENT & SUPPLIES.
Atlanta Stamp & Stencil Wks.
Dixie Seal & Stamp Co.
Jacobs & Co.
Lupton's Sons Co., David.
Monroe Calculating Mch. Co.
Sanymetal Products Co.
Smith Bros. Typewriter Co.

OFFICE BUILDING SPACE.
Woodside Securities Co.

OFFICE PARTITIONS.
(See Partitions.)

OIL—LUBRICATING.
Johnson & Co., Inc., Oliver.
N. Y. & N. J. Lubricant Co.
Texas Co
Wadsworth, Howland & Co., Inc.

OIL ENGINES.
(See Engines Oil.)

OILS—FINISHING.
(See Finishing and Sizing Materials.)

OIL CUPS.
(See Lubricants.)

OIL PAPER.
Bradley Mfg. Co., A. J.

OIL PUMPS.
(See Pumps—Oil.)

OIL SEPARATORS.
(See Separators.)

OILING DEVICES.
(See Lubricators.)

OPENING MACHINERY—COTTON, WOOL, WASTE, ETC.
Murray Company, The.
Proctor & Schwartz, Inc.
Saco-Lowell Shops.
Schofield Co., Wm.
Whitin Machine Works.

OVERHEAD CARRIERS.
Chisholm-Moore Mfg. Co.
Curtis Pneumatic Mchry. Co.
Dowman, George.
Euclid Crane & Hoist Co.
Wagner Mfg. Co.

OXIDIZING MACHINERY.
Phila. Drying Machinery Co.

OXY-ACETYLENE APPARATUS AND SUPPLIES.
Fulton Supply Co.
Oxweld Acetylene Co.
Standard Gas Products Co.

OXYGEN.
Bird-Potts Co., Inc.
Oxweld Acetylene Co.

PACKING BOXES AND CASES—WOODEN.
Hightower Box & Tank Co.

PACKINGS.
Jenkins Bros.

PAINT.
American Cement Paint Co.
Barrett Co., The.
Detroit Graphite Co.
DeVilbiss Mfg. Co.
Dixon Crucible Co., Jos.
Hockaday Co.
Johnson & Co., Oliver.
Sonneborn Sons, Inc., L.
Wadsworth, Howland & Co., Inc.
Ware Paint Co.
Williams, C. L.

PAINT SPRAYING EQUIPMENT.
DeVilbiss Mfg. Co.
Stowe, Jr., Geo. M.

PAINTING CONTRACTORS.
(See Contractors.)

PANEL BOARD.
(See Switchboards.)

PAPER.
Bradley Mfg. Co., A. J.

PARTITIONS—STEEL AND WIRE.
Anchor Post Iron Works.
Cyclone Fence Co.
Dowman, George.
Dowman-Dozier Mfg. Co.
Lupton's Sons Co., David.
Mills Co.
Manufacturers Equip. & Eng'g Co.
Sanymetal Products Co.

PAVING BRICKS.
National Paving Brick Mfg. Asso.

PERBORATE OF SODA.
Roessler & Hasslacher Chemical Co.

PERFORATED METAL.
(See Screens and Sieves.)

PEROXIDES.
Roessler & Hasslacher Chemical Co.

PICK COUNTERS.
(See Counters.)

PICKERS—CURLED HAIR.
Davis & Furber Mch. Co.
Proctor & Schwartz, Inc.
Schofield Co., Wm.

PICKERS—LEATHER.
Bond Co., Chas.
Garland Mfg. Co.
Jacobs Mfg. Co., E. H.

PICKER LOOPS.
Jacobs Mfg. Co., E. H.

PICKER BAGS
Smith Mfg. Co.

PICKER CONE BELT TENSION DEVICE.
Bahan Textile Mch. Co.

PICKER STICKS.
Garland Mfg. Co.

PICKING MACHINERY.
Davis & Furber Mch. Co.
Howard & Bullough Am. Machine Co.
Proctor & Schwartz, Inc.
Saco-Lowell Shops.
Schofield Co., Wm.
Whitin Machine Works.

PIN BOARDS.
Washburn, Inc.

PINIONS.
General Electric Co.

PIPE—STEEL RIVETED.
Fulton Supply Co.
Youngstown Sheet & Tube Co.

PIPE AND PIPE FITTINGS.
Crane Co.
Fulton Supply Co.
Lunkenheimer Co.
Parks-Cramer Co.
Scaife & Sons Co., Wm. B.

PIPE JOINT COMPOUND.
Dixon Crucible Co., Jos.
Fulton Supply Co.

PIPING—COTTON.
Youngstown Sheet & Tube Co.

PLAYGROUND APPARATUS & EQUIPMENT.
Crane Co.
Manufacturing Equip. & Eng'g Co.
Rundle-Spence Mfg. Co.

PNEUMATIC COLLECTING & CONVEYING SYSTEMS.
Sturtevant Co., B. F.

PNEUMATIC MACHINERY & TOOLS.
Curtis Pneumatic Mchry. Co.

PORCELAIN GUIDES.
Mitchell-Bissell Co.

PORTABLE HOUSES AND GARAGES (STEEL).
Dowman, George.
Dowman-Dozier Mfg. Co.
Maryland Metal Bldg. Co.

PORTABLE CONVEYORS.
(See Conveyors.)

POSTS—FENCE (WOOD)
Southern Wood Preserving Co.

POWER—ELECTRIC.
Alabama Power Co.
Georgia Ry. & Power Co.
Tennessee Electric Power Co.

POWER TRANSMISSION EQUIPMENT.
Aldrich Machine Works.
Allis-Chalmers Mfg. Co.
Bond Co., Chas.
Bristol Co.
Carlyle-Johnson Mch. Co.
Cresson-Morris Co.
Clipper Belt Lacer Co.
Detroit Belt Lacer Co.
Dixon Crucible Co., Jos.
Dodge Mfg. Co.
Fafnir Bearing Co.
Fulton Supply Co.
General Electric Co.
Graton & Knight Mfg. Co.
Hyatt Roller Bearing Co.
Link-Belt Company.
Morse Chain Co.
Reeves Pulley Co.
Renold, Inc., Hans.
Rhoads & Sons, J. E.
Skayef Ball Bearing Co.
Transmission Ball Bearing Co.
U. S. Ball Bearing Co.
Westinghouse Elec. & Mfg. Co.
Williams & Sons, I. B.

PREHEATING APPARATUS.
Oxweld Acetylene Co.

PRESERVATIVE PAINT FOR METAL WORK.
(See Paints.)

PRESSED STEEL.
Lupton's Sons Co., David.

PRESSES.
American Laundry Mchry. Co.
Butterworth & Sons Co., H. W.
Economy Baler Co.
Logemann Bros. Co.
Phila. Drying Mch. Co.
Proctor & Schwartz, Inc.
Reliance Machine Works.
Rex Eng'g Corp.
Textile Finishing Machinery Co., The.

PRESSURE GAUGES.
(See Gauges.)

PRESSURE REGULATORS.
(See Regulators—Pressure.)

PRINTERS (CLOTH).
(See Dyers.)

PRINTING.
Jacobs & Co.
Showalter Printing Co., A. J.

PRINTING EXTRACTORS—HYDRO.
Tolhurst Machine Works.

PROPELLER FANS.
(See Blowers.)

PSYCHROMETERS.
Bristol Co.
Foxboro Co., Inc., The.

PULLEYS.
Cole Mfg. Co., R. D
Cresson-Morris Co.
Dodge Mfg. Co.
Fulton Supply Co.
Link-Belt Company.
Reeves Pulley Co.
Renold, Inc., Hans.

PULLEY COVERING.
Reeves Pulley Co.
Williams & Sons, I. B.

PUMPS.
Allis-Chalmers Mfg. Co.
American Oil Pump & Tank Co.
Fulton Supply Co.
Goulds Mfg. Co.
Sydnor Pump & Well Co., Inc.
Toomey, Frank.
Walsh & Weidner Boiler Co., The.
Westinghouse Elec. & Mfg. Co.

PUMPS—OIL.
American Oil Pump & Tank Co.
Lunkenheimer Co.

PUMP VALVES.
(See Valve Discs.)

PYROMETERS.
Bristol Co.
Foxboro Co.
Taylor Instrument Co.

QUILLS.
Jordan Mfg. Co.
U S Bobbin & Shuttle Co.

QUILL CLEANING MACHINES.
Terrell Machine Co.

RAILS (STEEL).
Ryerson & Son, Inc., Jos. T.

RAILROADS.
Seaboard Air Line Ry.
Southern Ry.

RECEPTACLES—FIBRE.
(See Fibre Products.)

RECORDING INSTRUMENTS.
Bristol Co.
Foxboro Co., Inc.
General Electric Co.
Taylor Instrument Co.

RECOVERING TOP FLATS.
Howard Bros. Mfg. Co.

REEDS AND REED WIRE.
American Supply Co.
Atlanta Harness & Reed Mfg. Co.
Emmons Loom Harness Co.
Hayes Loom Reed & Harness Co.
Steel Heddle Mfg. Co.

REELS.
Allen Co.
Crompton & Knowles Loom Works.
Draper Corporation.
Hunt Machine Co., Rodney.
Mossberg Pressed Steel Co.
Saco-Lowell Shops.
Schofield Co., Wm.
Whitin Machine Works.

REFLECTORS—LAMPS.
(See Lamp Reflectors.)

REGULATORS—LIQUID LEVEL.
Foxboro Co., Inc.
General Electric Co.

REGULATORS (COMPRESSED GAS).
Oxweld Acetyene Co.

REGULATORS—PRESSURE.
Bristol Co.
Foxboro Co., Inc., The.
General Electric Co.
Taylor Instrument Co.

ELECTRIC WIRING CONTRACTOR

THE CURTIS CO.
Chattanooga, Tenn.
TEXTILE WORK A SPECIALTY

FULTON SUPPLY CO.
70 NELSON ST., ATLANTA, GA.
Get Our Prices on
BOBBINS — SPOOLS — TRAVELERS —
CHECK STRAPS AND TEXTILE SUPPLIES

LEATHER BELTING
TRANSMISSION EQUIPMENT
PIPE
VALVES AND FITTINGS
PUMPS
MOTORS
LATHES
MACHINE TOOLS
WELDING OUTFITS AND SUPPLIES
ELECTRIC DRILLS
ETC.

COMPLETE STOCKS MILL SUPPLIES AND MACHINERY
Quality—Service—Right Prices

Schofield Patent Automatic Opener and Duster
For opening and dusting Wool, Cotton, Linters, Hair and kindred fibrous substances.
"Schofield" intermediate feeds for Cards, Wool, Rag, Waste, Hair and Lumper Pickers, Automatic, Cone and Oldham Willows, Rag and Extract Dusters, Waste Pullers, Blamaine Lap Feeds, Curled Hair Pickers, Needle Looms, etc.
WILLIAM SCHOFIELD COMPANY
Iron Founders, Textile Machinery Builders.
Krams Ave., Manayunk, Philadelphia, Pa.

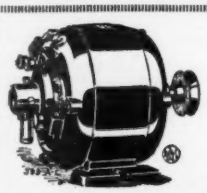
HARRISON D. PANTON, E. E.
Consulting Engineer
Electrical Textile Mechanical
Design, Consultation, Tests, Investigations, Appraisals, and Reports.
GILMER BLDG. RALEIGH, N. C.

LAMPS! LAMPS!
Manufacturers Licensed Under G. E. Patents

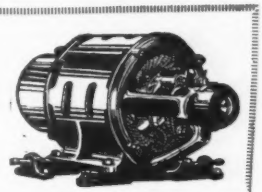
FUSES, FUSE PLUGS, SOCKETS, ETC.
GET PRICES AND DISCOUNTS
LUKE SEAWELL, Distributor
420 AUSTELL BUILDING ATLANTA, GA.

SOUTHERN ELECTRIC SUPPLY CO.
Distributors
81 MARIETTA ST. ATLANTA, GA.
COMPLETE line electrical supplies for every purpose, including Rome Wires and Cables, Buckeye Conduit, Wiremold and Fittings, Columbia Safety Switches and Boxes, "H&H" and Hubbell Wiring Devices, Pittsburgh Transformers, Buckeye National Mazda Lamps, Universal Heating Devices, etc.
Send us your orders and inquiries.
Prompt attention always.
"Southern Service Satisfies"

SYDNOR PUMP & WELL CO., INC.
RICHMOND VIRGINIA
DEEP WELL DRILLING—WATER SUPPLY ENGINEERS
Twenty-Five Years Experience in Solving Water Problems
LUITWIELER NON-PULSATING DEEP WELL PUMPS
The Most Efficient Water Supply Equipment Made.



STANDARD ELECTRIC COMPANY
ELECTRICAL MACHINERY REPAIRED
Motors — Generators — Transformers — Armature Rewinding
1821 EAST MAIN ST. RICHMOND, VA.



BUYERS' INDEX—Continued.

REGULATORS—TEMPERATURE.
Stowe, Jr., Geo. M.
(See Temperature Controllers.)

REINFORCING SLAG.
Birmingham Slag Co.

REPAIRING—ELECTRICAL.
Briggs Shaffner Co.
Curtis Co., The.
Southern Electrical Supply Co.
Huntington & Guerry, Inc.
Westinghouse Elec. & Mfg. Co.

REPAIRING—TEXTILE MACHINERY, ETC.
Bird-Potts Co., Inc.
Briggs-Shaffner Co.
General Machine Works.
Southern Spindle & Flyer Co.
Standard Electric Co.

RESTAURANT EQUIPMENT.
Sanymetal Products Co.

RIBBERS.
(See Knitting Machinery.)

RIB TOP CUTTERS.
General Machine Works.
Wildman Mfg. Co.

RING TRAVELERS—STEEL AND BRONZE.
Whitinsville Spinning Ring Co.
Whitin Machine Works.

RINGS—SPINNING.
(See Spinning Rings.)

ROCKER SHAFT BEARINGS.
(See Bearings.)

RODS (WELDING).
Oxweld Acetylene Co.

ROLLER BEARINGS.
Hyatt Roller Bearing Co.

ROLLER LEATHER.
Bond & Co., Chas.

ROLLS—CALENDER.
Butterworth & Sons Co., H. W.
Textile Finishing Mchy. Co.
U S Bobbin & Shuttle Co.
Washburn, Inc.

ROLLS—RUBBER COVERED.
Butterworth & Sons Co., H. W.
Textile Finishing Mchy. Co.
Stowe & Woodward Co.

ROLLS—STEEL.
Butterworth & Sons Co., H. W
Southern Spindle & Flyer Co.
Textile Finishing Mchy. Co.
U S Bobbin & Shuttle Co.
Washburn, Inc.

ROLLS (WOODEN).
U S Bobbin & Shuttle Co.
Washburn, Inc.

ROOFING.
Barrett Co.
Cortright Metal Roofing Co.
Dowman, George.
Dowman-Dozier Mfg. Co.
Murphy's Sons, C. P.
Richardson Co.
Southern Wood Preserving Co.
Wadsworth, Howland & Co.

ROOFERS.
Dowman, Geo.
Dowman Dozier Mfg. Co.
Murphy's Sons, C. P.

ROOFS WATERPROOFED AND INSULATED.
Murphy's Sons, C. P.

ROOFING AUXILIARIES (PIPE GUTTERS—EAVE TROUGH—ETC.)
Dowman, George.
Dowman-Dozier Mfg. Co.

ROOF AND CEMENT COATING.
American Cement Paint Co.
Barrett & Co.
Detroit Graphite Co.
Hockaday Co.
Johnson & Co., Inc., Oliver.
Murphy's Sons, C. P.
Sonneborn Sons, Inc., L.
Wadsworth, Howland & Co.
Ware Paint Co.

ROPE—TRANSMISSION.
Allis-Chalmers Mfg. Co.
Cresson-Morris Co.
Link-Belt Company.

ROVING CANS.
(See Cans—Roving.)

ROVING MACHINERY.
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

RUBBER COVERED ROLLS.
Stowe & Woodward Co.

RUBBER SPECIALTIES (TEXTILE MILLS).
Textile Rubber Co.
Stowe & Woodward Co.

RUBBER STAMPS.
(See Stamps, Stencils, Etc.)

SALTS.
(See Finishing & Sizing Materials.)

SAND BLAST DEVICE.

SASH OPERATOR (WINDOW).
Callahan Co., T. J.
Dowman, George.

SANITARY PRODUCTS.
Crane Co.
Davis Septic Tank & Eng. Co.
Manufacturing Equip. & Eng'g Co.
Rundle-Spence Mfg. Co.
Sanymetal Products Co.
Vogel Co., Jos. A.

SANITARY ENGINEERS, CONTRACTORS & BUILDERS.
(See Engineers—Sanitary.)

SASH-WINDOW—STEEL.
(See Window Sash.)

SAXOPHONE, ETC.
(See Musical Instruments.)

SCALES.
Toledo Scale Co.

SCALE PREVENTER—BOILER.
(See Boiler Feed Water Purification.)

SCREENS—MOVING PICTURE.
Southern Theatre Equip. Co.

SCREENS AND SIEVES—PERFORATED.
Allis-Chalmers Mfg. Co.
Erdle Perforating Co.
Link Belt Company.

SCOURING MACHINERY.
(See Washers—Cloth.)

SCRUBBING MACHINE—FLOOR.
American Scrubbing Equip. Co.

SCRUBBING AND WASHING POWDERS.
Mathieson Alkali Works.
India Alkali Works.
Warren Soap Mfg. Co.

SCUTCHERS.
Whitin Mch. Wks.

SECOND HAND MACHINERY AND SUPPLIES.
Old Hickory Powder Plant.
Toomey, Frank, Inc.

SECTION BEAMS.
(See Beams.)

SELVAGE HARNESS.
(See Harness.)

SEWING MACHINES.
Merrow Machine Co., The.
Textile Finishing Mchry. Co.

SHADES—ELECTRIC LAMP.
(See Reflectors.)

SHAFTING AND HANGERS.
Allis-Chalmers Mfg. Co.
Cresson-Morris Co.
Dodge Mfg. Co.
Fafnir Bearing Co.
Fulton Supply Co.
Hyatt Roller Bearing Co.
Link-Belt Company.
Skayef Ball Bearing Co.
Transmission Ball Bearing Co.

SHEET STEEL (PLAIN AND GALVANIZED).
Ryerson & Son, Inc., Jos. T.

SHELVING—SECTIONAL STEEL.
Dowman, George.
Dowman-Dozier Mfg. Co.
Hyatt Roller Bearing Co.
Lupton's Sons Co., David.
Manufacturing Equip. & Eng'g Co.
Mills Co.
Sanymetal Products Co.

SHINGLES—ASPHALT.
Barrett Co.
Dowman, George.
Dowman-Dozier Mfg. Co.

SHINGLES (METAL).
Cortright Metal Roofing Co.
Dowman, Geo.
Dowman-Dozier Mfg. Co.

SHINGLES—WOOD.
Southern Cypress Mfg. Asso.
Southern Wood Preserving Co

SHIPPING ROOM MACHINERY AND SUPPLIES.
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.
Dixie Seal & Stamp Co.
Hightower Box & Tank Co.
Smith Mfg. Co.
Standard Fibre Co.
Toledo Scale Co.

SHOWER BATHS AND CABINETS.
Crane Co.
Mills Co.
Sanymetal Products Co.

SHUTTLES.
Crompton & Knowles Loom Works.
Draper Corporation.
Jordan Mfg. Co.
Shambow Shuttle Co.
U S Bobbin & Shuttle Co.
Williams Co., J. H.

SINGEING MACHINERY.
Butterworth & Sons Co., H. W.
Phila. Drying Machine Co.
Textile Finishing Machinery Co., The

SITES FOR FACTORIES.
(See Industrial Sites.)

SIZE BOX TEMPERATURE CONTROLLER.
Bristol Co.
Foxboro Co., Inc., The.

SIZE KETTLES AND TANKS.
(See Bleaching Kiers or Tanks.)

SIZING AND FINISHING COMPOUNDS.
(See Finishing and Sizing Materials.)

SKEWERS.
Jordan Mfg. Co.

SKYLIGHTS.
Dowman, George.
Dowman-Dozier Mfg. Co.
Lupton's Sons Co., David.

SLAG FOR CONCRETE.
Birmingham Slag Co.

SLASHERS AND SLASHER ROOM SUPPLIES.
Butterworth & Sons Co., H. W.
Cole Mfg. Co., R. D.
Howard & Bullough.
Mossberg Pressed Steel Corp.
Saco-Lowell Shops.
Textile Finishing Machinery Co., The.

SLASHER HOODS.
Cole Mfg. Co., R. D.

SLASHER TAPE.
(See Tape—Slasher.)

SLATE ASPHALT ROOFING.
Barrett Co.

SLIDING PARTITION HARDWARE.
Dowman, George.
Dowman-Dozier Mfg. Co.
Lupton's Sons Co., David.
Lyon Metallic Mfg Co.
Manufacturing Equip. & Eng'g Co.
Sanymetal Products Co.
Wagner Mfg. Co.

SLUBBERS.
Howard & Bullough.
Saco-Lowell Shops.
Whitin Machine Works.

SMOKE SCREENS.
Dowman, George.

SMOKE STACKS.
Casey-Hedges Co.
Dowman-Dozier Mfg. Co.
Walsh & Weidner Boiler Co.

SOAPS—TEXTILE.
Arnold, Hoffman & Co.
Borne, Scrymser Co.
Ciba Co., Inc.
India Alkali Works.
Kali Mfg. Co.
Lennig & Co., Chas.
Mathieson Alkali Works, Inc.
Rohm & Haas Co.
Sonneborn Sons, Inc., L.
Stein, Hall & Co.
United Chemical Products Corp.
Warren Soap Mfg. Co.
Wolf & Co., Jacques.

SOFTENERS—COTTON.
(See Finishing & Sizing Materials.)

SOFTENERS—WATER.
(See Water Softeners.)

SOLDERLESS CONNECTORS—FRANKEL.
Westinghouse Elec. & Mfg. Co.

SOLOZONE.
Roessler & Hasslacher Chem. Co.

SOLVENTS.
(See Finishing.)

SPEEDERS.
Jordan Mfg. Co.
Parker & Co., Walter L.
U S Bobbin & Shuttle Co.
Vermont Spool & Bobbin Co.

SPEED VARYING TRANSMISSION.
Reeves Pulley Co.

SPEEDOMETERS.
(See Counters.)

SPINDLES.
Draper Corporation.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.
Vermont Spool & Bobbin Co.
Whitin Machine Works.

SPINNERS.
(See Yarn Manufacturers.)

SPINNING FRAMES.
American Machine Co., H. & B.
Crompton & Knowles Loom Works.
Howard & Bullough.
Saco-Lowell Shops.
Schaum & Uhlinger.
Whitin Machine Works.

SPINNING RINGS.
Draper Corporation.
Fulton Supply Co.
Howard & Bullough.
Great Mfg. Co.
Saco-Lowell Shops.
Whitin Machine Works.
Whitinsville Spinning Ring Co.

SPINNING TAPE SCPECIALISTS.
American Textile Banding Co., Inc.
Barber Mfg. Co.

SPOOLING MACHINERY AND SUPPLIES.
Barber-Colman Co.
Draper Corporation.
Foster Mch. Co.
Mill Devices Co.
Proctor & Schwartz, Inc.
Saco-Lowell Shops.
Whitin Machine Works.

SPOOLS AND SKEWERS.
Allen Co.
Fulton Supply Co.
Jordan Mfg. Co.
Lestershire Spool & Mfg. Co.
Mossberg Pressed Steel Corp.
Parker Co., Walter L.
Steel Heddle Mfg. Co.
Textile Rubber Co.
U S Bobbin & Shuttle Co.
Vermont Spool & Bobbin Co.

SPRAYING DEVICE FOR PAINTING.
(See Paint Spray.)

SPRINKLER TANKS.
(See Tanks, Towers, Etc.)

SPROCKETS.
Link-Belt Company.
Morse Chain Co.
Renold, Inc., Hans.

STAMPS, STENCILS AND STENCIL MACHINES.
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.
Dixie Seal & Stamp Co.

STAND PIPES.
(See Tanks.)

STARCH AND GUMS.
Arnold, Hoffman & Co.
Borne, Scrymser Co.
Bosson & Lane.
Ciba Co.
Corn Products Refining Co.
Kali Mfg. Co.
Keever Starch Co.
Mathieson Alkali Works, Inc.
Metz Co., H. A.
Penick & Ford, Ltd.
Sonneborn Sons, Inc., L.
Staley Co., A. E.
Stein, Hall & Co.
Warren Soap Co.

STEAM ENGINES.
(See Engines—Steam.)

STEAM PUMPS.
(See Pumps—Steam.)

STEAM SEPARATORS.
(See Separators.)

STEAM TRAPS.
(See Traps—Steam.)

STEEL (BARS, SHAPES, PLATES, SHEETS, ETC.)
Ryerson & Son, Inc., Jos. T.

STEEL BUILDINGS.
Bogert & Carlough.
Dowman, George.
Maryland Metal Bldg. Co.

STEEL SASH.
(See Sash—Steel.)

STEEL SHELVING, DOORS WINDOWS, PARTITIONS, ETC.
Bogart & Carlough.
Dowman, George.
Dowman-Dozier Mfg. Co.
Lupton & Sons Co., David.
Manufacturing Equip. & Eng'g Co.
Sanymetal Products Co.
Truscon Steel Co.

STEELS (STRUCTURAL).
Dowman, George.
Bogart & Carlough.

STENCILS AND STENCIL PAPERS.
(See Stamps and Stencils.)

STENCIL BRUSHES.
(See Marking Pots and Brushes.)

STENCIL CUTTING MACHINES.
Atlanta Stamp & Stencil Wks.
Bradley Mfg. Co., A. J.
Dixie Seal & Stamp Co.

STICKS—PICKER.
(See Picker Sticks.)

STOOLS.
(See Furniture—Mill.)

STOP WATCHES.
Bristol Co.

STOP MOTION.
Crompton & Knowles Loom Works.
Draper Corporation.
Eclipse Textile Devices, Inc.
Whitin Machine Works.
Wildman Mfg. Co.

STOKERS.
Westinghouse Elec. & Mfg. Co.

STORAGE RACKS.
(See Shelving.)

STORAGE TANKS.
(See Tanks.)

STRAPS (LUG, CHECK, HEEL, TUGGER, PICKER, HARNESS, ETC.)
Atlanta Harness & Reed Co
Bond Co., Chas.
Fulton Supply Co.
Hayes Loom Harness & Reed Co.
Jacobs Mfg. Co., E. H.
Garland Mfg. Co.

STRAPPING.
(See Leather Specialties or Check Straps.)

STREET PAVING.
McCrary Co., J. B.

STREET LIGHTING FIXTURES.
General Elec. Co.
McCrary Co., J. B.
Westinghouse Elec. & Mfg Co.

STRICKLES.
Howard Bros. Mfg. Co.

SULPHIDES.
(See Finishing & Sizing Materials.)

SULPHUROUS ACID GENERATOR.
Textile Chemical Engineers, Inc.

SWEEPS.
(See Brushes.)

SWINGS (PLAYGROUND).
(See Playground Equipment.)

SUPPLIES—GENERAL MILL.
Dodge Mfg. Co.
Fulton Supply Co.
Jenkins Bros.
Link-Belt Co.
Lunkenheimer Co.
Morse Chain Co.
Rhoads & Sons, J. E.
Williams & Sons, I. B.

SUPPLIES (OFFICE).
(See Office Equipment.)

SWITCHES—KNIFE-ELECTRIC
Fulton Supply Co.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

SWITCHBOARDS—PANEL.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

SYSTEMS (BUSINESS).
Ernst & Ernst

TABLES (METAL)
(See Furniture)

TAPES—MILL.
Lupton's Sons Co., David.
Manufacturing Equip. & Eng'g Co.
Sanymetal Products Co.

TACHOMETERS (RECORDING AND INDICATING).
Bristol Co.
Foxboro Co., Inc., The.
Root Co.

TALLOW.
(See Finishing Machinery.)

TANKS (ELEVATED).
Casey-Hedges Co.
Cole Mfg. Co., R. D.
Dowman-Dozier Mfg. Co.
Godfrey Conveyor Co.
Lombard Iron Works.
Rome Machine & Fdry Co.
Walsh & Weidner Boiler Co.
Woolford Wood Tank Co., G.

TANKS (SPRINKLER).
Cole Mfg. Co., R. D.
Lombard Iron Works.
Rome Machine & Fdry. Co.
Woolford Wood Tank Co., G

TANKS (STEEL STORAGE).
American Oil Pump & Tank Co.
Dowman-Dozier Mfg. Co.
Cole Mfg. Co., R. D.
Godfrey Conveyor Co.
Lombard Iron Works.
Rome Machine & Fdry. Co.
Walsh & Weidner Boiler Co.

TANKS (SEPTIC).
Davis Septic Tank & Eng. Co.

TANKS (WOODEN).
Hightower Box & Tank Co.
Philadelphia Drying Mchry Co.
Proctor & Schwartz, Inc.
Textile Finishing Mchry. Co
Woolford Wood Tank Co., G.

TAPE LOOMS—COTTON.
Foster Mch. Co.
Fletcher Works.
Schaum & Uhlinger.

BIRD-POTTS CO., INC.

Largest Welding Works in the South

Engineers, Manufacturers
Welders, Machinists

WELDING

ELECTRIC WELDING MACHINES
OXY-ACETYLENE WELDING MACHINES
ALL WELDING SUPPLIES

WELDING BUILDING

376-378 MARIETTA ST. ATLANTA, GA.

BALING-PRESSES FOR ALL PURPOSES

HAND-OPERATED
BELT-DRIVEN ELECTRIC
HYDRAULIC

Both box and open types.

Write for full details.

LOGEMANN BROTHERS COMPANY
3102 BURLEIGH ST. MILWAUKEE, WIS.

DAVIS SEPTIC TANKS

Our indoor waste water sewage disposal system is the last word in sanitation and economy.

Write for particulars.

Davis Septic Tank and Engineering Company

217½ South Tryon St. Charlotte, North Carolina

SOFT WATER - CLEAR WATER FOR EVERY PURPOSE

DECALSO ZERO WATER SOFTENERS
LIME AND SODA WATER SOFTENERS
PRESSURE AND GRAVITY FILTERS

SOFTENER

FOR PARTICULARS ADDRESS
AMERICAN WATER SOFTENER CO.
LEHIGH AVE. AT 4TH. ST.
PHILADELPHIA, PA.

FILTER

WHEN tape drive was first applied to cotton frames, Barber Tapes were the ones that were held up and selected by engineers as the best. The reason was that Barber Tapes were designed with the proper weight and construction to get maximum spindle speed and maximum service.

Since that time there have been many kinds of tape placed on the market, yet Barber still maintains that enviable reputation established years ago.

We carry extensive stocks and a wire to us at our expense brings service that is swift and sure. Write or wire for prices.

BARBER MFG. CO.,
Lowell, Mass.
Spinning Tape Specialists.

BARBER
Spinning & Twisting TAPES

BUYERS' INDEX—Continued.

TAPES AND BRAIDS.
American Textile Banding Co., Inc.
Barber Mfg. Co.
Weimar Brothers.

TAPES—SPINNING AND TWISTING.
Barber Mfg. Co.

TAPE MAKING MACHINES.
(See Bandage and Tape Machinery.)

TAPIOCA FLOUR.
Stein, Hall & Co.

TARPAULINS.
Smith Mfg. Co.

TAX SERVICE.
Ernst & Ernst.

TELEPHONE—CALLING SYSTEM.
Carter Electric Co.
General Electric Co.

TEMPERATRE REGULATORS.
Bristol Co.
Carrier Eng. Corp.
Foxboro Co., Inc., The.
Parks-Cramer Co.
Taylor Instrument Co.

TEMPLES.
Draper Corporation.

TENTS (ALL KINDS).
Smith Mfg. Co.

TENTERS.
Butterworth & Sons Co., The.
Textile Finishing Mach. Co.

TENTER HOUSNG & RECONSTRUCTING SYSTEM.
Proctor & Schwartz, Inc.

TENTER FRAME DRYERS.
Sturtevant Co., B. F.

TESTERS FOR YARN, FABRIC CORD, ROPE, RUBBER, WIRE, ETC.
Scott & Co., Henry L.

TEXTILE MACHINERY.
(See Cotton Mill Machinery.)

THEATRE EQUIPMENT.
Southern Theatre Equip. Co.

THERMOMETER—ANGLE AND STRAIGHT STEM.
Bristol Co.
Foxboro Co., Inc. The.
Taylor Instrument Co.

THERMOMETERS—RECORDING AND INDEX.
Bristol Co.
Foxboro Co.
Taylor Instrument Co.

THERMOSTATS.
Bristol Co.
Foxboro Co.

THIN PLACE PREVENTERS.
Draper Corporation.

THREAD GUIDES.
Mitchell-Bissell Co.
Palmer Co., The I. B.

TILE ROOFING.
Richardson Co.

TIMBER.
(See Lumber.)

TIME CLOCKS.
(See Clocks.)

TIME RECORDERS.
Bristol Co.

TIES—BALING.
(See Bale Ties.)

TIRE FABRIC EQUIPMENT.
Fletcher Works.

TOILETS.
Crane Co.
Davis Septic Tank & Eng. Co.
Rundle-Spence Mfg. Co.
Vogel Co., Jos A.

TOILETS (SEPTIC TANK).
Davis Septic Tank & Eng. Co.

TOILET PARTITIONS.
Dowman, George.
Dowman-Dozier Mfg. Co.
Lupton's Sons Co., David.
Manufacturing Equip. & Eng'g Co.
Mills Co.
Sanymetal Products Co.

TOOL CABINETS—STEEL.
Lupton's Sons Co., David.
Manufacturing Equip. & Eng'g Co.

TOOL STANDS—STEEL.
Lupton's Sons Co., David.
Mills Co.

TORCHES (BRAZING, CUTTING AND WELDING).
Bird-Potts Co., Inc.
Oxweld Acetylene Co.

TOOLS (MACHINE—HAND & ELECTRIC).
Fulton Supply Co.
Ryerson & Son, Inc., Jos. T.

TOP FLATS RECOVERED.
Howard Bros. Mfg. Co.

TOWERS.
(See Tanks—Elevated.)

TRANSMISSION—POWER.
(See Power Transmission Machinery.)

TRAPS—RETURN STEAM.
American Blower Co.
Morehead Mfg. Co.

TRAVELERS.
Fulton Supply Co.
Whitinsville Spinning Ring Co.

TRIPTODS.
U S Bobbin & Shuttle Co.

TROLLEYS & HOISTS.
Chisholm-Moore Mfg. Co.
Curtis Pneumatic Machy. Co.
Euclid Crane & Hoist Co.
Ryerson & Son, Inc., Jos. T.

TRUCKS—AUTO.
White Co.

TRUCKS, BASKETS, ETC.
Allen Co.
Smith Mfg. Co.
Standard Fibre Co.
Washburn, Inc.

TRUCKS (BEAM).
Allen Co.

TRUCKS, INTER, ETC.
Allen Co.
Standard Fibre Co.
Washburn, Inc.

TRUCKS (WELDERS).
Oxweld Acetylene Co.

TUBES AND CONES.
Southern Novelty Co.

TUBS.
(See Tanks—Wooden.)

TUBING—METAL.
Dowman-Dozier Mfg. Co.
Youngstown Sheet & Tube Co.

TURBINES—HYDRAULIC.
Allis-Chalmers Mfg. Co.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

TURBINES—STEAM.
Allis-Chalmers Mfg. Co.
American Blower Co.
General Electric Co.
Sturtevant Co., B. F.
Westinghouse Elec. & Mfg. Co.

TURBO UNDERGRATE BLOWERS.
American Blower Co.
Buckeye Blower Co.
Sturtevant Co., B. F.

TWISTING MACHINERY AND SUPPLIES.
Barber Mfg. Co.
Draper Corporation.
Foster Mch. Co.
Howard & Bullough.
Proctor & Schwartz, Inc.
Saco-Lowell Shops.
U S Bobbin & Shuttle Co.
Whitin Machine Works.

TYPEWRITERS.
Smith & Bros. Typewriter Co., L. C.

UNIONS—BRONZE.
Crane Co.
Fulton Supply Co.
Jenkins Bros.
Lunkenheimer Co.

URINALS.
Crane Co.
Rundle-Spence Mfg. Co.
Vogel Co., Jos. A.

VACUUM CLEANERS.
Sturtevant Co., B. F.

VACUUM GAUGES.
(See Gauges.)

VACUUM PANS.
Cresson-Morris Co.

VALVES—ANGLE, GLOBE, CROSS, BLOW-OFF, CHECK, GATE, POP-SAFETY, ETC.
Crane Co.
Fulton Supply Co.
Jenkins Bros.
Lunkenheimer Co.

VALVES (BACK PRESSURE).
Crane Co.
Jenkins Bros.
Lunkenheimer Co.
Oxweld Acetylene Co.

VALVES—NON-RETURN STOP.
Crane Co.
Fulton Supply Co.
Jenkins Bros.
Lunkenheimer Co.

VARIABLE SPEED TRANSMISSION.
Reeves Pulley Co.

VARNISHES.
(See Paints.)

VATS.
(See Tanks—Wooden.)

VENTILATING APPARATUS.
American Blower Co.
Buckeye Blower Co.
Carrier Eng. Corp.
Dowman-Dozier Mfg. Co.
General Electric Co.
Parks-Cramer Co.
Philadelphia Drying Mchy. Co.
Sargent's Sons Co., C. G.
Sturtevant Co., B. F.
Tolhurst Machine Co.

VENTILATING & HEATING CONTRACTORS.
Dowman, George.
Dowman-Dozier Mfg. Co.

VILLAGE ARCHITECTS AND DESIGNERS.
Dallis, Park A.
Robert & Co.
Sirrine, J. E.

VILLAGE HOUSES.
(See Houses—Ready Built.)

VOLTMETERS AND AMMETERS.
Bristol Co.
Westinghouse Elec. & Mfg. Co.

WAGON AND CAR UNLOADERS.
Curtis Pneumatic Mchry. Co.

WALLBOARD.
Richardson Co.

WAREHOUSE—PORTABLE.
(See Buildings.)

WAREHOUSE DOOR HARDWARE.
(See Doors and Hardware.)

WAREHOUSE TRUCKS.
(See Trucks.)

WARP DRAWING MACHINE.
Barber-Colman Co.
Crompton & Knowles Loom Works.

WARP EYES.
Reutlinger, J. J.

WATT METERS
(See Voltmeters.)

WARPERS AND WARPING MACHINERY AND SUPPLIES.
Auto Creel Corp.
Barber-Colman Co.
Draper Corporation.
Foster Mch. Co.
Howard & Bullough.
Mill Devices Co.
Proctor & Schwartz, Inc.
Saco-Lowell Shops.
Suter, Alfred.
U S Bobbin & Shuttle Co.

WASH BASINS.
(See Lavatories.)

WASHERS—CLOTH.
American Laundry Mchry. Co.
Butterworth & Sons Co., H. W.
Hunt Machine Co, Rodney.
Klauder-Weldon Dyeing Mch. Co.
Philadelphia Drying Mchry. Co
Rome Machine & Fdry. Co.
Textile Finishing Mchry. Co.
Tolhurst Mch. Wks.

WASHING POWDERS—FLOOR.
India Alkali Works.

WASTE BINS—STEEL.
Lupton's Sons Co., David.

WASTE MACHINERY—COTTON.
Howard & Bullough.
Logemann Bros.
Proctor & Schwartz, Inc.
Rex Eng. Corp.
Saco-Lowell Shops.
Sargent's Sons Co., C. G.
Schofield Co., Wm.
Whitin Machine Co.

WASTE SEPARATORS.
(See Separators.)

WATCHMAN CLOCKS.
(See Clocks—Watchman.)

WATER COOLERS—FOUNTAIN.
Crane Co.
Manufacturing Equip. & Env'g Co
Rundle-Spence Mfg. Co.

WATER SOFTENERS AND PURIFIERS.
American Water Softener Co.
Scaife & Sons Co., Wm. B.

WATER SUPPLY SYSTEMS.
Sydnor Pump & Well Co., Inc.

WATER WORKS ENGINEERS CONTRACTORS & BUILDERS.
McCrary Co., J. B.

WATER TOWERS.
(See Tanks—Elevated.)

WATERPROOFING MACHINERY.
Butterworth & Sons Co., H. W.
Textile Finishing Machinery Co., The.

WEAVING.
(See Yarn Manufacturers.)

WELDING APPARATUS—ELECTRIC ARC.
Bird-Potts Co., Inc.
General Electric Co.
Westinghouse Elec. & Mfg. Co.

WELDING AND CUTTING APPARATUS AND SUPPLIES—OXY-ACETYLENE.
Bird-Potts Co., Inc.
Fulton Supply Co.
Oxweld Acetylene Co.

WELDING—JOB.
Bird-Potts Co., Inc.
Briggs-Shaffner Co.

WELFARE ARCHITECTS.
(See Village Architects.)

WELFARE EQUIPMENT.
American Laundry Mchry. Co
Crane Co.
Conn, Ltd., C. G.
Davis Septic Tank & Eng. Co
Dowman-Dozier Mfg. Co.
Home Canner Co.
Mills Co.
Manufacturing Equip. & Eng'g Co.
Minter Homes Co.
Rundle-Spence Mfg. Co.
Smith Mfg. Co.
Southern Theatre Equip. Co.
Westinghouse Elec. & Mfg. Co.

WELL DRILLING.
Sydnor Pump & Well Co., Inc.

WHEELS—FIBRE.
(See Fibre Products.)

WHEEL PULLER.
General Electric Co.

WHISTLES—STEAM AND AIR.
Crane Co.
Fulton Supply Co.
Jenkins Bros.
Lunkenheimer Co.

WHIZZERS.
Fletcher Works.
Tolhurst Mach. Wks.
Schaum & Uhlinger.

WINDERS.
Firsching, J. A.
Foster Mch. Co.
Howard & Bullough American Machine Co.
Saco-Lowell Shops.
Universal Winding Co.

WINDOW CLEANING COMPOUND.
Skybryte Co.

WINDOW FRAMES AND SASH—STEEL.
Bogert & Carlough.
Dowman, George.
Dowman-Dozier Mfg. Co.
Lupton's Sons Co., David.
Truscon Steel Co.

WINDOW SASH OPERATOR.
Callahan Co., T. G.
Dowman, George.

WIRES—DROP.
(See Drop Wires.)

WIRE FENCING, PARTITIONS & MACHINERY GUARDS.
Anchor Post Iron Works.
Cyclone Fence Co.
Dowman, George.

WIRE GLASS WINDOWS.
Bogert & Carlough.
Dowman, George.
Dowman-Dozier Mfg. Co.

WIRE HEDDLES.
(See Heddles.)

WIRE (STEEL).
Ryerson & Co., Inc., Jos. T

WIRE (WELDING).
Oxweld Acetylene Co.

WIRING CONDUITS AND FITTINGS.
(See Electric Machinery and Supplies.)

WIRING—ELECTRICAL.
(See Electrical Contractors.)

WOOD.
(See Lumber.)

WOOD BLOCK FLOORING.
Southern Wood Preserving Co.

WOOD BOXES.
(See Packing Cases.)

WOOD PRESERVERS.
American Cement Paint Co.
Barrett Co.
Dixon Crucible Co., Jos.
Johnson & Co., Inc., Oliver.
Ware Paint Co.
Wadsworth, Howland & Co., Inc.

WOOD PULLEYS.
(See Pulleys.)

WOOD TANKS.
(See Tanks.)

WOODEN SPECIALTIES.
Allen Co.

WOOLEN MACHINERY.
Butterworth & Sons Co., H. W.
Crompton & Knowles Loom Works.
Davis & Furber Mch. Co.
Schofield Co., Wm.
Phila. Drying Machinery Co.
Proctor & Schwartz, Inc.
Sargent's Sons Corp., C. G.
Textile Finishing Mchry. Co.
Tolhurst Machine Works.
Whitin Machine Works.

YARN MANUFACTURERS.
Aberfoyle Mfg. Co.
American Yarn & Processing Co.
Boger & Crawford.
Callaway Mills, Inc.
Dixie Mercerizing Co.
Florsheim, H. A.
Lenoir Cotton Mills.
Hunter Mfg. & Comm. Co.
Quissett Mill
Tolar & Hart.
Weimar Bros.

YARN DEALERS AND COMMISSION MERCHANTS.
(See Cotton Yarn and Cloth Commission Merchants and Dealers.)

YARN DRYERS.
(See Dryers.)

YARN DYERS.
(See Dyers.)

YARN TESTERS.
Scott & Co., Henry L.

MILL AND MACHINE BRUSHES

Mason Brush Works

Worcester, Mass.

Cotton, Woolen, Silk Made and Repaired

STEEL

for Immediate Shipment from Stock

Iron and steel bars, shapes, rails, plates, sheets, bolts, rivets, boiler tubes and fittings, concrete reinforcing, machine tools, small tools, etc.

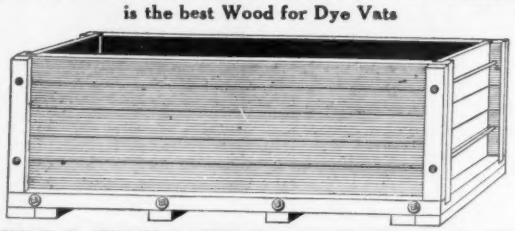
Write for Journal and Stock List

JOSEPH T. RYERSON & SON INC.

CHICAGO ST. LOUIS CINCINNATI DETROIT BUFFALO NEW YORK

LOUISIANA RED GULF CYPRESS

is the best Wood for Dye Vats



THE G. WOOLFORD WOOD TANK MFG. CO.

Office Lincoln Bldg., PHILADELPHIA, PA.

MAKE THE BEST DYE VATS

Your Inquiries solicited. See Consolidated Textile Catalog, Page 214, or ask for Catalog.

Liquid E.B.G. Chlorine

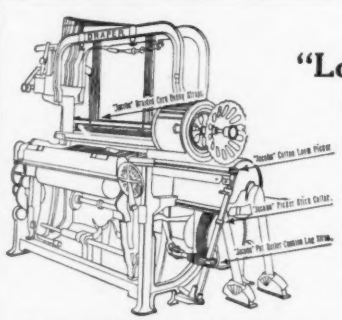
Our container equipment includes 100 and 150 pound Cylinders, Ton Drums, and Tank Cars.

Electro Bleaching Gas Co.

PIONEER MANUFACTURERS of LIQUID CHLORINE

Plant: NIAGARA FALLS, N.Y.

Main Office 9 E. 41st St. New York *Chicago Office* 105 W. Monroe St



Our "Loom Supplies"

are used by Draper Corporation, Crompton & Knowles, Mason Machine Works, Stafford Company, Hopedale Mfg. Co., and carried in stock by all the largest Supply Houses.

E. H. JACOBS MANUFACTURING COMPANY

DANIELSON, CONNECTICUT

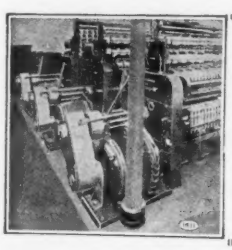
MANUFACTURED WEATHER makes "Every day a *good* day"

Humidification · Dehumidification
Heating · Ventilation · Purification
Drying

Carrier Engineering Corporation

750 Frelinghuysen Ave. Newark, N. J.

Boston · Buffalo · Chicago · New York · Philadelphia



RENOLD CHAINS

For Power Transmission

Montreal HANS RENOLD INC., *Toronto*

365 Broadway, N. Y.

ECLIPSE CRAYONS

Mill Crayons for every textile purpose.

Let us send you samples.

Eclipse Mill Crayon Co.

LOWELL, MASS.

Advertisers' Index

Aberfoyle Mfg. Co. 82
Alabama Power Co. ..... *
Aldrich Machine Works 46-R
Allen Co. 259
Allis-Chalmers Mfg. Co. 269
American Blower Co. 260
American Cement Paint Co... 271
American Laundry Machinery Co. 246
American Machine Co., H. & B. 31-R
American Oil Pump & Tank Co. 22
American Scrubbing Equipment Sales Co. 263
American Supply Co. 260
American Textile Banding Co. 258
American Trust Co. 287
American Water Softener Co. 293
American Yarn & Processing Co. 282
Anchor Post Iron Works ...40-R
Arnold Hoffman & Co. ... 247
Atlanta Brush Co. 263
Atlanta Harness & Reed Mfg. Co. 285
Atlanta Rubber Stamp & Stencil Works 280
Auto Creel Corp. 252

Bahan Textile Mch. Co. 64
Barber-Colman Co. ...13 and 297
Barber Mfg. Co. 293
Barrett Co. 29-R
Beer Co., H. & B. 281
Birmingham Slag Co. ..... *
Bird-Potts Co., Inc. 293
Bogert & Carlough 28
Boger & Crawford 280
Bond & Co., Chas. 54-R
Borne, Scrymser Co. 247
Bosson & Lane 246
Bradley Mfg. Co., A. J. 54-R
Briggs-Shaffner Co. 287
Brinton Co., H. 74
Bristol Co. 272
Buckeye Blower Co. 48-R
Butterworth & Sons Co., H. W. .....38 and 39

Callahan, T. J. 28
Callaway Mills, Inc. 281
Carlyle-Johnson Machine Co. 274
Carrier Engineering Corp. .. 295
Carter Electric Co. 267
Carver-Beaver Yarn Co. 280
Casey-Hedges Co. 276
Chisholm-Moore Mfg. Co. ... 270
Ciba Co., Inc. 250
Clipper Belt Lacer Co. 273
Cole Mfg. Co., R. D. 287
Conn, Ltd., C. G. 264
Corn Products Refining Co. .. 40
Cortright Metal Roofing Co... 297
Crane Co. ..... *
Cresson-Morris Co. 272
Crompton & Knowles Loom Works 257
Curtis Co., The 291
Curtis Pneumatic Machinery Co. 277
Cyclone Fence Co. 269

Dallis, Park A. 285
Davis & Furber Mch. Co. ... *
Davis Septic Tank & Eng'g Co. 293
Davis, Roger W. 257
Detroit Belt Lacer Co. 46-R
Detroit Graphite Co. 17
DeVilbiss Mfg. Co. 243
Dixie Mercerizing Co. 82
Dixon Crucible Co., Jos. 54-R
Dixie Seal & Stamp Co. 289
Dodge Mfg. Co. 37
Dowman-Dozier Mfg. Co. ... 268
Dowman, George .....28 and 29
Draper Corporation 3
Dryer Corp. of America 246
Dufur & Co. 287

Eclipse Mill Crayon Co. 295
Eclipse Textile Devices 244
Economy Baler Co. 66
Electro Bleaching Gas Co.... 295
Emmons Loom Harness Co... 289
Ernst & Ernst 38-R
Euclid Crane & Hoist Co. ... 297

Fafnir Bearing Co. 6
Fawcett, Hughes 279
Firsching Co., J. A. 54-R
Fletcher Works 245
Florsheim, H. A. 279
Ford Co., J. B. 250
Foster Machine Co. ..... *
Foxboro Co., Inc., The 41
Franklin Process Co. 2
Fulton Supply Co. 291

Garland Mfg. Co. 64
General Electric Co. 9
General Machine Works 76
Georgia Railway & Power Co. *
Godfrey Conveyor Co. 276
Goulds Mfg. Co. 287
Granite State Needle Co. ... 84
Grasselli Chemical Co. 249
Graton & Knight Mfg. Co., The 273
Greist Mfg. Co. 261

Hayes Loom Reed & Harness Co 260
Hemphill Mfg. Co. 72
Hightower Box & Tank Co... 262
Hockaday Co. 19
Home Canner Mfg. Co. ..... *
Hopedale Mfg. Co. 255
Hotel Tuller 272
Howard Bros. Mfg. Co. ..... *
Howard & Bullough American Machine Co. 31-R
Hunt Machine Co., Rodney .. *
Hunter Mfg. & Comm. Co. ... *
Huntington & Guerry, Inc... 266
Hyatt Roller Bearing Co. ... .30-B and 33

India Alkali Works 251
International Eng'g Works .. 10
Ivanhoe-Regent Works of G. E. Co. 267

Jacobs Co., E. H. 295
Jacobs & Co. 26
Jamieson Co., J. B. 281
Jenkins Bros. 277
Johnson & Co., Oliver 30
Jordan Mfg. Co. 64

Kali Mfg. Co. 42
Keever Starch Co. 249
Klauder-Weldon Dyeing Mach. Co. 245

La Frentz & Co., F. W. 280
Lane & Co., J. H. 280
Lennig & Co., Chas. 248
Lenoir Cotton Mills 281
Lestershire Spool & Mfg. Co. 256
Link-Belt Co. 300
Lockwood, Greene & Co. 25
Logemann Bros. 293
Lombard Fdry. & Mach. Wks. 287
Lowell Crayon Co. 252
Lunkenheimer Co. 278
Lupton's Sons Co., David ... 285

Manufacuring Equipment & Eng'g Co. 265
Maryland Metal Building Co. 29
Mason Brush Works 295
Mathieson Alkali Works, Inc. 46
McCrary Co., J. B. ..... *
Merrow Machine Co. 76
Metz & Co., H. A. 44-R
Mill Devices Co. 258
Mills Co. 265
Minter Homes Co. ..... *
Mitchell-Bissell Co. 1
Monroe Calculating Machine Co. .....50 R
Morehead Mfg. Co. 278
Morse Chain Co. 35
Mossberg Pressed Steel Corp. 261
Murphy's Sons, C. P. 270
Murray Company, The 8

National Aniline & Chemical Co. 44
National Paving Brick Manufacturers Assn. 24
New Brunswick Chemical Co. 59
New York & New Jersey Lubricant Co. 274

Old Hickory Powder Plant.. 283
Oxweld Acetylene Co. 42-R

Palmer Co., I. E. 252
Panton, Harrison D. 291
Parker Co., Walter L. 256
Parks-Cramer Co. 14
Pearson, Jos. T. 76
Penick & Ford Co., Ltd. 250
Perry-Mann Electric Co. 267
Phila. Drying Machinery Co. 245
Proctor & Schwartz, Inc. ... 4
Prudential Insurance Co. of America ..... *

Quaker City Chemical Co. ... 247
Quissett Mill 30-A

Reeves Pulley Co. 275
Reliance Machine Works ... 76
Renold, Inc., Hans 295
Reutlinger, J. J. 253
Rex Engineering Corp. 265
Rhoads & Sons, J. E. 274
Robert & Co. ..... *
Richardson Co. 27
Roessler & Hasslacher Chemical Co. .....60 and 62
Rohm & Haas Co. 248
Rome Machine & Foundry Co. 299
Root Co., The 56-R
Ross-Gould Co. 264
Roy & Sons Co., B. S 297
Rundle-Spence Mfg. Co. 264
Ryerson & Son, Inc., Jos. T... 295

Saco-Lowell Shops 257
Sandoz Chemical Co. 243
Sanymetal Products Co. 52-R
Sargent's Sons Corp., C. G... 244
Scaife & Sons, Wm. B. 287
Schaum & Uhlinger 245
Schofield's Sons Co., J. S. ... 276
Schofield Co., Wm. 291
Scott & Co., Henry L. 255
Scott & Williams, Inc. 69
Seaboard Airline Railway ... 16
Seawell, Luke 291
Shambow Shuttle Co. 258
Showalter Printing Co., A. J. 262
Sirrine Co., J. E. 23
Skayef Ball Bearing Co. 5
Skybryte Co. 27-R
Smith Mfg. Co. 66
Smith & Bros. Typewriter Co. 262
Sonneborn Sons, Inc., L. ... 297
Southern Cypress Mfg. Asso... 271
Southern Electric Supply Co... 291
Southern Novelty Co. 15
Southern Railway Co. ..... *
Southern Spindle & Flyer Co. 260
Southern Theatre Equip. Co.. 18
Southern Wood Preserving Co. 52-R
Southwestern Broom Mfg. Co. 251
Stafford Co. 12
Staley Mfg. Co., A. E. 248
Standard Electric Co. 291
Standard Fibre Co. 285
Steel Heddle Mfg. Co. 38-R
Stein, Hall & Co. 43
Stowe, Jr., Geo. M. 287
Stowe & Woodward Co. 66
Surpass Chemical Co. 243
Sturtevant Co., B. F. 251
Suter, Alfred 252
Sydnor Pump & Well Co. ... 291

Taylor Instrument Co. 246
Terrell Machine Co. 46-R
Texas Co. 36
Textile Chemical Engineers, Inc. 299
Textile Finishing Machinery Co. 298
Textile Rubber Co. ..... *
Tennessee Electric Power Co. .....20 and 21
Tolar & Hart ..... *
Toledo Scale Co. 264
Tolhurst Machine Works ...35-R
Toomey, Frank, Inc. 282
Torrington Co., The 80
Transmission Ball Bearing Co. 275
Travelers Insurance Co. 7
Trump Bros. Machine Co.... 74
Truscon Steel Co. ..... *

United Chemical Products Co. 289
Universal Winding Co. 79
U. S. Ball Bearing Co. 31
U S Bobbin & Shuttle Co....36-R

Variety Fire Door Co. 29
Vermont Spool & Bobbin Co.. 259
Vogel Co., Jos. A. 268

Wadsworth, Howland & Co., Inc. 33-A
Wagner Mfg. Co. 28
Walsh & Weidner Boiler Co. 279
Want Ads 282
Ware Paint Co. ..... *
Warren Soap Mfg. Co. 82
Washburn, Inc. 266
Weimar Bros. 279
Westinghouse Electric & Mfg. Co. 11
White Co. ..... *
Whitin Machine Works 253
Whitinsville Spinning Ring Co. 254
Wiggins Co., John B. ..... *
Wildman Mfg. Co. 70
Williams, C. L. 285
Williams & Sons, I. B. 32
Williams Co., J. H. 254
Wolf & Co., Jacques 248
Woodside Securities Co. .... *
Woodward, Baldwin & Co. ... 279
Woolford Wood Tank Mfg. Co. 295

Youngstown Sheet & Tube Co. 268

AMALIE PRODUCTS

Two great aids to better bleaching and dyeing

In cotton yarn and piece goods bleacheries and dyehouses throughout New England and the South, mill men are finding they can make sure of better results by the use of

SONOLENE C C
(For the Kier Boil)

An effective detergent for the kiering process, this kier agent readily dissolves and removes the natural fatty and waxy impurities in the cotton. As a result the subsequent bleaching process is greatly facilitated and a perfect white obtained in bleaching. Bleacheries have eliminated one boil where two boils were previously necessary by using *Sonolene CC.*

SULPHO TEXTOL OIL
(For the Dye Bath)

A pure Castor Oil product made by an exclusive process and double sulphonation, both *lime* and *acid proof.* Added to the dye bath it proves a valuable assistant insuring more thorough and even penetration of the dye and brighter colors. It imparts to the yarn usually a genuine soft feel, eliminating stickiness caused by ordinary turkey red oils.

Write us for literature of vital interest to you—list of users gladly furnished.

L. SONNEBORN SONS, Inc.
Manufacturing Chemists for the Textile Industry
114 Fifth Avenue, New York, N. Y.
Makers of the Famous Sonneborn Warp Dressings
Boston Providence Phila. Baltimore Charlotte Greenville, S. C. Atlanta Chicago Chattanooga

L. SONNEBORN SONS, INC., NEW YORK, N.Y.

B & C
TRADE MARK
WARP TYING MACHINES
WARP DRAWING MACHINES
AUTOMATIC SPOOLERS
HIGH SPEED WARPERS
HAND KNOTTERS
BARBER-COLMAN COMPANY
BOSTON, MASS. GREENVILLE, S.C.
MAIN OFFICE AND FACTORY
ROCKFORD, ILL. U.S.A.

GRINDING MACHINERY
for
Cotton and Woolen Cards
Garnets, Napper and Calender Rolls
B. S. ROY & SON CO.
Est. 1868
WORCESTER MASSACHUSETTS
Southern Agent, E. M. TERRYBERRY,
1126 Healey Bldg., Atlanta, Ga.

One Man Does The Work of Four
with an electric hoist. The hoist is the most efficient and economical method of handling and storing heavy things throughout the mill, and the electric hoist is the most dependable and easiest operated hoist.
EUCLID Cranes and Hoists are made in sizes for every textile mill requirement. Ask for catalog.
The Euclid Crane & Hoist Co.
Euclid, Ohio
EUCLID CRANES AND HOISTS

CORTRIGHT METAL SHINGLE

Hand dipping gives shingles a heavier coating
These shingles are first formed of prime roofing tin. Then each is dipped separately in a bath of molten zinc. Edges are covered as well as sides.
We also make shingles from tight-coated galvanized sheets and of tin. The latter we paint red or green as preferred. If you are not familiar with Cortright Metal Shingles we will be glad to tell you about them and to send our booklet *concerning that roof.*

CORTRIGHT METAL ROOFING CO.
Philadelphia *Chicago*
STANDARD SINCE 1887

MAIN OFFICE AND WORKS
PROVIDENCE, R. I.

NEW YORK OFFICE
HUDSON TERMINAL BLDG.

THE TEXTILE-FINISHING MACHINERY CO

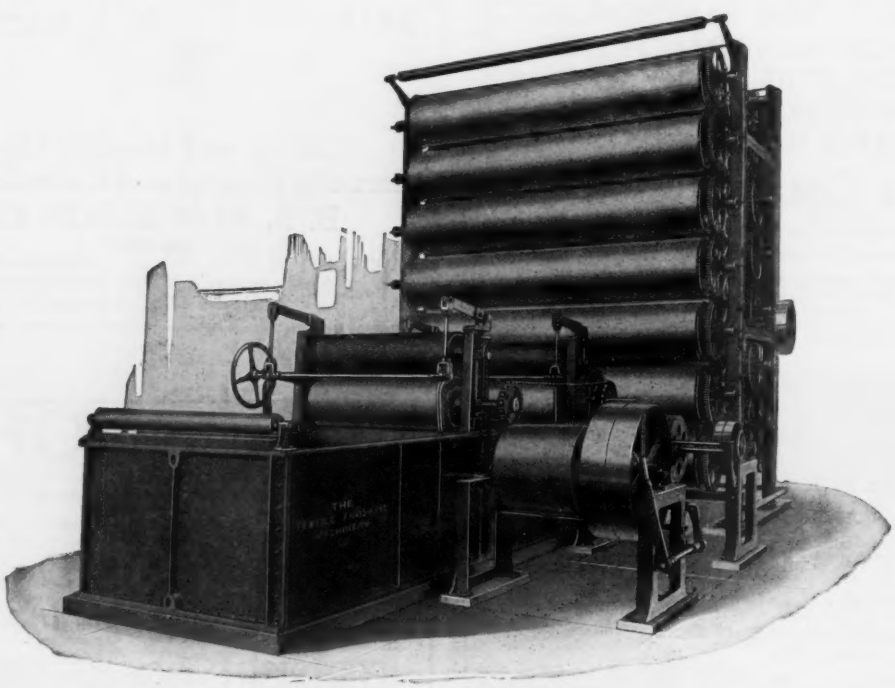
CANADIAN REPRESENTATIVES
WHITEHEAD, EMMANS, LTD.
MONTREAL

SOUTHERN REPRESENTATIVE
H. G. MAYER
CHARLOTTE, N. C.

YOUR INQUIRIES SOLICITED

FOR

Machinery for Singeing, Bleaching, Mercerizing, Dyeing, Drying, Printing and Finishing Textile Fabrics and Warps



Warp Washer and Dryer

The Improved ROME Dyeing Machine

Made of

MONEL METAL

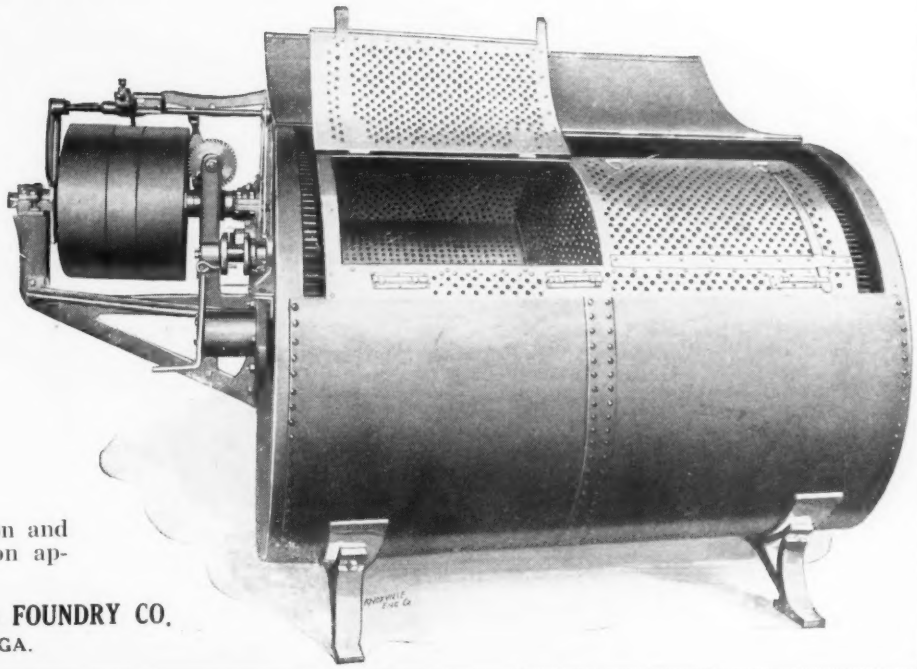
in sizes to dye or bleach from 50 to 300 of the finest hosiery.

We also manufacture

STEEL ROTARY MACHINES

and storage tanks for sulphur dyes.

Detailed description and prices furnished on application.



ROME MACHINE & FOUNDRY CO.
ROME, GA.

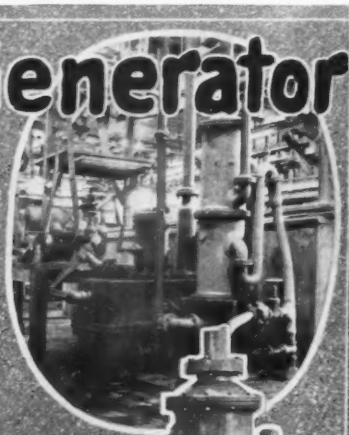
Sulphurous Acid Generator

GUARANTEED GAS-TIGHT

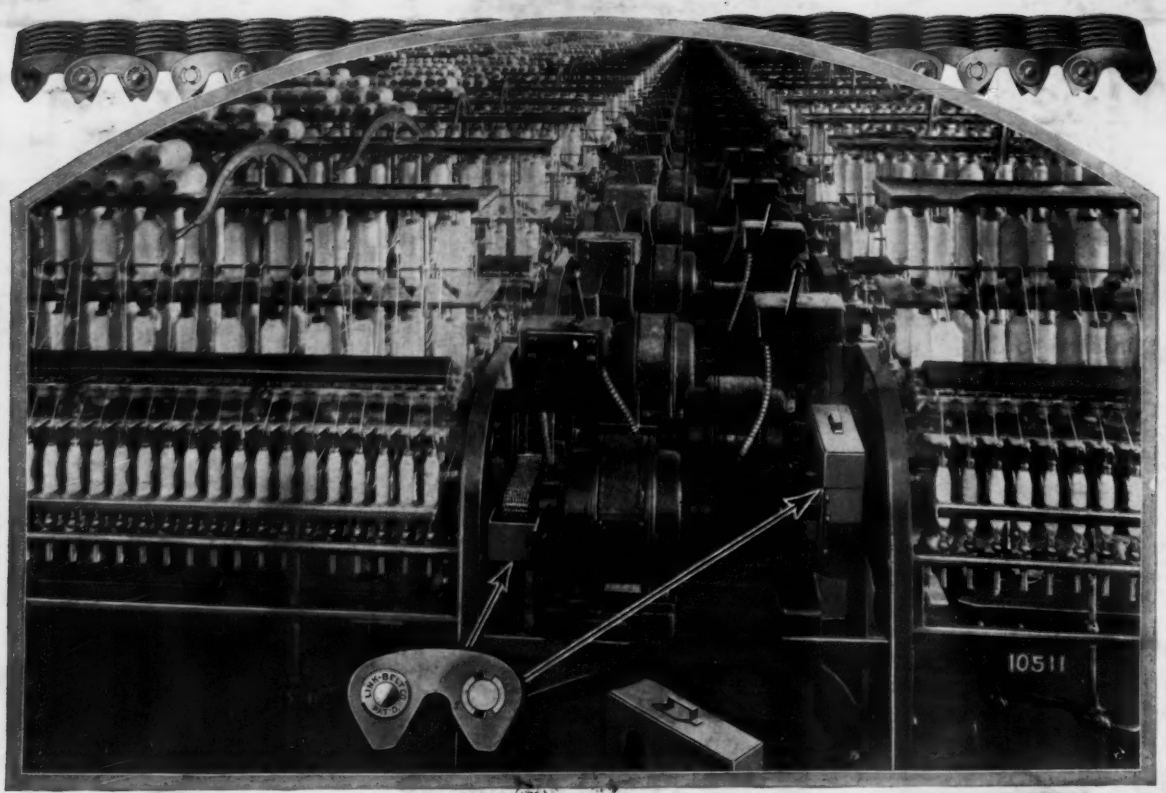
Constructed wholly of lead, the MONAGHAN Sulphurous Acid Generator is impervious to destructive chemical reaction—and is GUARANTEED Gas-Tight.

With the MONAGHAN Sulphurous Acid Generator, you can manufacture your own antichlor in your own bleach house in the form of Sulphurous Acid at a greater saving than you can procure it elsewhere. *Sulphurous* acid has a greater affinity for chlorine than has *sulphuric* acid and produces a much more uniform product at a great saving in power and labor. It eliminates two washings and allows washers to produce more.

Investigate the MONAGHAN today! It will mean money in your pocket!



THE TEXTILE CHEMICAL ENGINEERS, Inc.
230 Newton St.,
Waltham, Mass.



Saving $2700 a year in wages alone

for the Brandon Mills, Greenville, S. C.

Says Mr. Hatch, Secretary: "Link-Belt Silent Chains and individual motors have increased the production of our spinning department 3% and saved us $2,700 a year in wages alone."

Further: "We now have 156, 7½ H. P. Link-Belt Silent Chain Drives on our spinning frames. In their five years of use they have cost practically nothing for repairs. There is no noticeable wear on either the pinions or the chains, in spite of steady operation.

"Link-Belt Silent Chains stand up better than other makes we have used. The casings improve the operation. The manufacturers back up their equipment with good service."

Send for Data Book No. 125. Return the coupon.

LINK-BELT COMPANY
910 S. MICHIGAN AVENUE, CHICAGO

Please send postpaid—Link-Belt Silent Chain Data Book No. 125.

Name _____

Firm _____

Street _____

Town _____

State _____

COTTON

RETURN THIS COUPON

1253

LINK-BELT COMPANY

PHILADELPHIA	CHICAGO	INDIANAPOLIS
New York . . Woolworth Bldg.	Cleveland . . 329 Rockefeller Bldg.	Denver . . Lindrooth, Shubart & Co., Boston Bldg.
Boston 9 . . 49 Federal St.	Detroit . . 4210 Woodward Ave.	Louisville, Ky. Frederick Wehle, 321 Starks Bldg.
Pittsburgh . . 325 Fifth Ave.	Kansas City, Mo. 306 Elmhurst Bldg.	Atlanta . . 24 Marietta St.
St. Louis . . Central Nat'l Bank Bldg.	Seattle . . 820 First Ave., S.	New Orleans . C. O. Hinz, 504 Carondelet Bldg.
Buffalo . . 745 Ellicott Square	Portland, Ore. . . 101 First St.	Birmingham, Ala. S. L. Morrow, 720 Brown-Marx Bldg.
Wilkes-Barre . . 2d Nat'l Bank Bldg.	San Francisco . . 108 Second St.	Charlotte, N. C. . J. S. Cothran, Com'l Bank Bldg.
Huntington, W. Va. Robson-Prichard Bldg.	Los Angeles . . 163 N. Los Angeles St.	Link-Belt Limited Toronto and Montreal
H. W. CALDWELL & SON CO., CHICAGO	NEW YORK, Woolworth Bldg.	DALLAS, TEXAS, 709 Main St.

LINK-BELT
SILENT CHAIN DRIVES